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Department of  
Agriculture

Natural  
Resources  
Conservation  
Service

In cooperation with  
North Carolina  
Department of  
Environment, Health, and  
Natural Resources; North  
Carolina Agricultural  
Research Service; North  
Carolina Cooperative  
Extension Service;  
Person Soil and Water  
Conservation District; and  
Person County Board of  
Commissioners

# Soil Survey of Person County, North Carolina





# How To Use This Soil Survey

## General Soil Map

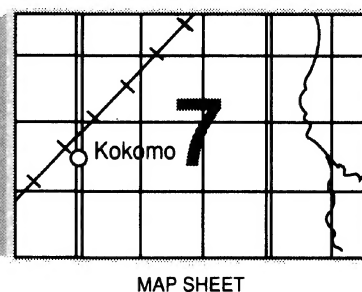
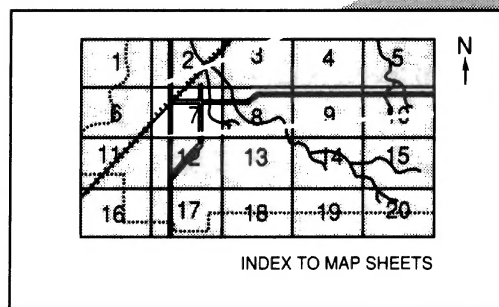
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

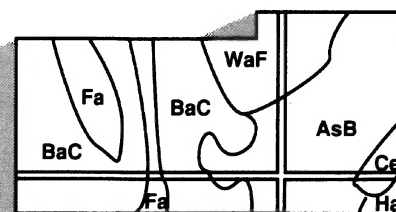
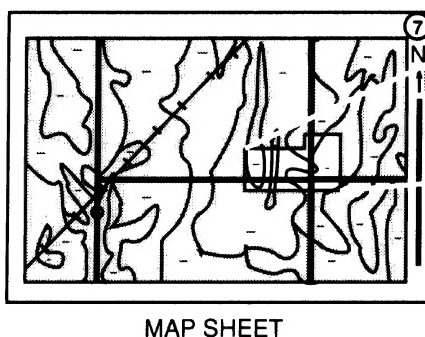
## Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

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This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the North Carolina Agricultural Research Service, and local agencies. The Natural Resources Conservation Service, formerly the Soil Conservation Service, has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1984. This soil survey was made cooperatively by the Natural Resources Conservation Service; the North Carolina Department of Environment, Health, and Natural Resources; the North Carolina Agricultural Research Service; the North Carolina Cooperative Extension Service; Person Soil and Water Conservation District; and the Person County Board of Commissioners. It is part of the technical assistance furnished to the Person Soil and Water Conservation District. The Person County Board of Commissioners provided financial assistance for the survey.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

The first soil survey of Person County was published in 1928 by the U.S. Department of Agriculture. This survey updates the first survey, provides more detailed maps on aerial photographs, and contains more interpretive information (7).

All programs and services of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

**Cover: Farmland in an area of Appling and Wedowee soils in the western part of Person County. The principal conservation practices in this area are contour stripcropping, grassed waterways, field borders, and farm ponds.**



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# Foreword

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This soil survey contains information that can be used in land-planning programs in Person County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

Richard A. Gallo  
State Conservationist  
Natural Resources Conservation Service



# Soil Survey of Person County, North Carolina

By Larry T. Sink, Natural Resources Conservation Service

Soils surveyed by Larry T. Sink, John W. Tuttle, and Philip Schoeneberger,  
Natural Resources Conservation Service, and Richard Brooks, North Carolina Department  
of Environment, Health, and Natural Resources

United States Department of Agriculture, Natural Resources Conservation Service,  
in cooperation with  
North Carolina Department of Environment, Health, and Natural Resources;  
North Carolina Agricultural Research Service; North Carolina Cooperative Extension  
Service; Person Soil and Water Conservation District; and Person County Board  
of Commissioners

PERSON COUNTY is in the north-central part of North Carolina (fig. 1). According to the U.S. Census, the population of the county in 1980 was 29,164. The city of Roxboro, the county seat, had a population of 7,532. The county has an area of 258,707 acres, or 404 square miles.

## General Nature of the County

This section provides general information concerning Person County. It discusses history and development; physiography, relief, and drainage; water resources; transportation facilities and industry; and climate.

## History and Development

As early as 1740, a few settlers moved from the surrounding areas to the vicinity of Paine's Tavern and along the Hyco River. The greatest number of settlers arrived during the 1740's and 1750's from the northern colonies. These early settlers were mainly farmers who grew tobacco, corn, small grain, and cotton and raised cattle, hogs, and sheep.

In 1792, the North Carolina General Assembly established Person County from a part of Caswell County. The county was named in honor of General Thomas Person, a statesman from Granville County (6).

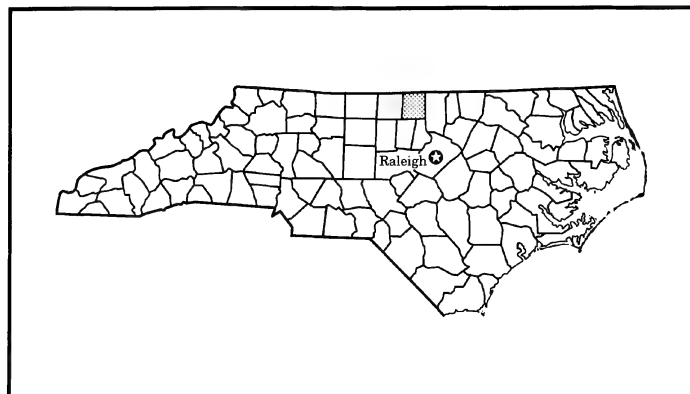


Figure 1.—Location of Person County in North Carolina.

The first court in the county was held at Paine's Tavern in 1791. In 1793, the court was moved to Moccasin Gap, which was renamed Roxborough and made the county seat. The name was changed by settlers from Scotland in honor of the Shire of Roxboro near the Scottish Highlands. In 1855, the name was shortened to Roxboro and the town was incorporated.

In 1870, the population of Person County was estimated at 11,700 (6). Farming was still the main enterprise in the county, and tobacco was the mainstay

of the economy. During this time, the county and Roxboro were somewhat isolated from other parts of the State because of the lack of transportation facilities. Mainly because of the coming of the railroad in 1890, the county began to grow and progress and smaller communities, such as Helena and Longhurst, were settled. The population increased to 16,000 in 1898 (6). Other industries began to develop in the county. Around 1900 a cotton mill and a towel mill were built in the county. The population grew from 19,000 in 1920 to more than 29,000 in 1980. Along with this growth came more diversified industries.

Agriculture contributes substantially to the economy of the county. Tobacco remains the chief cash crop. Other important crops are corn, soybeans, small grains, and sorghum. The livestock and poultry businesses are also important.

About 160,000 acres in Person County is used as woodland, 60,000 acres as cropland, 17,000 acres as hayland or pasture, and 14,700 acres as urban land and built-up land. The county has 7,000 acres of water areas (13).

## Physiography, Relief, and Drainage

Person County is in the Piedmont physiographic province. The soils throughout the county are underlain by both igneous and metamorphic rock. The areas of igneous rock are dominant in the central part of the county, and the areas of metamorphic rock are dominant in the eastern part. Both felsic (acid) and mafic (basic) types of rocks are present. About 17 percent of the soils in the county are strongly sloping to steep. The rest are nearly level or gently sloping to strongly sloping soils on Piedmont uplands and narrow to wide flood plains. Most of the upland ridges are convex, and the side slopes and shoulder slopes are dissected by numerous drainageways.

The county generally ranges from 400 to 650 feet above sea level in elevation. According to U.S. Geological Survey topographic maps, the highest elevation is about 890 feet above sea level, about 1 mile southwest of Roxboro. The lowest elevation is about 350 feet above sea level, where the Hyco River leaves the county in the northern part. Some of the higher ridges or peaks in the county, such as Hagers Mount and Mt. Tirzah, have an elevation of about 750 feet.

Tributaries of the Dan River, such as the Hyco River, Mayo Creek, and Blue Wing Creek, drain 156,000 acres, or about 60 percent of the county. The Tar River drains about 20,000 acres in the extreme eastern part of the county. The Flat River drains about 83,000 acres in the southern part.

About 65 percent of the soils in the county are well drained and 27 percent are moderately well drained, somewhat poorly drained, or poorly drained. The other 8 percent consists of Urban land, disturbed land, or water. The movement of surface water is slow in broad, nearly level areas and medium to rapid on gently sloping to strongly sloping ridges and steep side slopes.

## Water Resources

Water for households, farms, and industries in the county is available from a plentiful supply of ground water. This ground water is tapped through wells that have an average depth of 100 feet.

Water for livestock, irrigation, and recreational use is provided by more than 900 impounded ponds and streams. Hyco Reservoir and Mayo Reservoir provide water for cooling electric company generating plants and for recreational purposes.

The city of Roxboro obtains its water from Water Works Lake, which has a storage capacity of 850 million gallons. The city also has a backup water supply from City Reservoir, on the Person-Caswell County line. It has a storage capacity of 1.5 billion gallons.

## Transportation Facilities and Industry

Two U.S. highways, four State highways, and numerous State-maintained roads provide access to the county. One major railroad, the Norfolk and Western Railway, serves the county. The county is served by a local municipal airport.

Products manufactured in the county include textiles, fertilizers, air safety equipment, wood products, metal and rubber products, aluminum products, electronic components, concrete products, and brooms. The industrial plants are mainly along U.S. Highway 501 just north and south of Roxboro. Two major electric plants produce and distribute electricity.

## Climate

Person County is hot and generally humid in summer because of the moist maritime air. Winter is moderately cold but short because the mountains to the west protect the area from many cold waves. Precipitation is evenly distributed throughout the year and is adequate for all crops in most years.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Roxboro, North Carolina, in the period 1957 to 1981. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 39 degrees F



and the average daily minimum temperature is 29 degrees. The lowest temperature on record, which occurred at Roxboro on February 17, 1977, is -2 degrees. In summer, the average temperature is 75 degrees and the average daily maximum temperature is 86 degrees. The highest recorded temperature, which occurred at Roxboro on July 14, 1966, is 104 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 48 inches. Of this, 24 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 19 inches. The heaviest 1-day rainfall during the period of record was 5.72 inches at Roxboro on July 14, 1975. Thunderstorms occur on about 45 days each year, and most occur in summer.

The average seasonal snowfall is 13 inches. The greatest snow depth at any one time during the period of record was 12 inches. On an average of 5 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 60 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 9 miles per hour, in spring. Every few years in late summer or autumn, a tropical storm moving inland from the Atlantic Ocean causes extremely heavy rain for 1 to 3 days.

## How This Survey Was Made

This survey was made to provide information about the soils in Person County. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They studied many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other

living organisms and has not been changed by other biological activity.

Soils occur in an orderly pattern that results from the combined influence over time of climate, parent material, relief, and plants and animals. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils and relating their position to specific segments of the landscape, soil scientists develop a concept, or model, of how the soils were formed. This model enables the soil scientists to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify the soils. After describing the soils and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. The data from these analyses and tests and from field-observed characteristics and soil properties are used to predict behavior of the soils under different uses. Interpretations are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled

from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a relatively high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will be at a specific level in the soil on a specific date.

Soil boundaries are drawn on aerial photographs and each delineation is identified as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in accurately locating boundaries.

## Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes.

Consequently, every map unit is made up of the soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called minor soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are identified in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

# General Soil Map Units

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The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

## 1. Georgeville-Herndon-Tatum

*Gently sloping to steep, well drained soils that have a clayey subsoil; on Piedmont uplands*

### Setting

*Location in the county:* Northeastern, south-central, and eastern parts

*Landscape position:* Broad to narrow ridges and moderately broad to narrow, irregularly shaped side slopes (fig. 2)

*Slope:* 2 to 45 percent

### Composition

*Percent of the survey area:* 28

*Extent of components in the map unit:*

Georgeville soils—50 percent

Herndon soils—23 percent

Tatum soils—12 percent

Minor soils—15 percent

### Soil Characteristics

#### Georgeville

*Surface layer:* Brown loam

*Subsoil (upper part):* Red clay that has mottles in shades of yellow

*Subsoil (lower part):* Red silty clay loam that has mottles in shades of yellow and red

*Underlying material:* Mixed red, brownish yellow, and reddish yellow silt loam

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

#### Herndon

*Surface layer:* Yellowish brown loam

*Subsoil (upper part):* Strong brown clay loam

*Subsoil (middle part):* Strong brown clay that has mottles in shades of red

*Subsoil (lower part):* Yellowish red silty clay loam that has mottles in shades of red and yellow

*Underlying material:* Pinkish white, yellow, red, and yellowish red silt loam saprolite

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

#### Tatum

*Surface layer:* Brown loam

*Subsurface layer:* Dark grayish brown loam

*Subsoil (upper part):* Red clay loam

*Subsoil (middle part):* Red clay

*Subsoil (lower part):* Red clay loam that has mottles in shades of yellow

*Bedrock layer:* Multicolored, soft slate and gneiss

*Depth:* Deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 10 to 35 percent

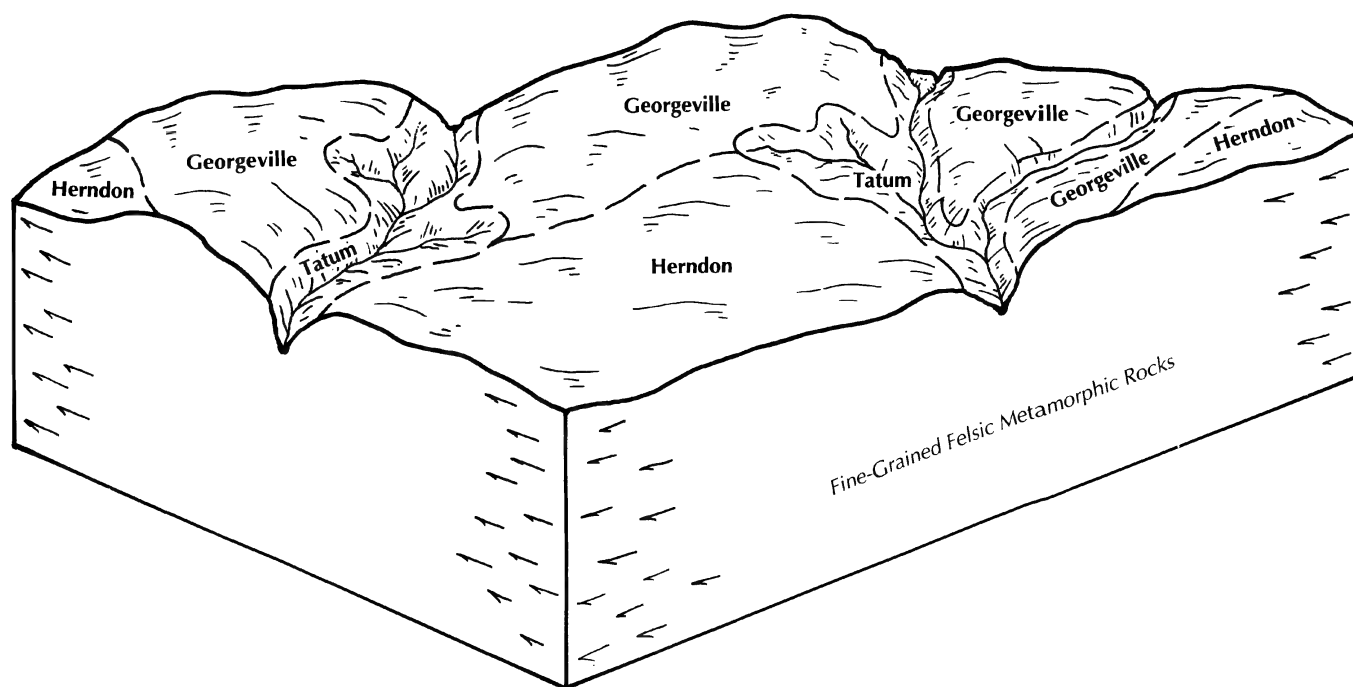


Figure 2.—Typical relationship of soils, landscape, and geology in the Georgeville-Herndon-Tatum general soil map unit.

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

#### **Minor Soils**

- The shallow, steep Goldston soils on side slopes
- The moderately well drained or somewhat poorly drained Lignum soils at the head of drainageways and in depressions
- The moderately well drained or somewhat poorly drained Orange soils in areas that are transitional to mafic and felsic crystalline rocks
- The somewhat poorly drained Chewacla and poorly drained Wehadkee soils on flood plains

#### **Use and Management**

**Uses:** Cropland, pasture and hayland, and woodland

#### **Cropland**

*Suitability:* Georgeville and Herndon—well suited;  
Tatum—poorly suited

*Management concerns:* The slope of the Tatum soils

#### **Pasture and hayland**

*Suitability:* Georgeville and Herndon—well suited;  
Tatum—moderately suited

*Management concerns:* The slope of the Tatum soils

#### **Woodland**

*Suitability:* Well suited

*Management concerns:* None

#### **Urban development**

*Suitability:* Georgeville and Herndon—well suited;  
Tatum—moderately suited

*Management concerns:* The slope of the Tatum soils

## **2. Wilkes-Enon-Helena**

*Gently sloping to steep, well drained or moderately well drained soils that have a loamy or clayey subsoil; on Piedmont uplands*

#### **Setting**

*Location in the county:* Extreme western part, around Lake Hyco and north of Woodsdale

*Landscape position:* Broad to narrow ridges and narrow, irregularly shaped side slopes (fig. 3)

*Slope:* 2 to 45 percent

#### **Composition**

*Percent of the county:* 18

*Extent of components in the map unit:*

Wilkes soils—52 percent

Enon soils—23 percent

Helena soils—8 percent

Minor soils—17 percent

### Soil Characteristics

#### Wilkes

*Surface layer:* Brown loam

*Subsoil (upper part):* Yellowish brown clay loam

*Subsoil (lower part):* Yellowish brown clay loam and mixed brownish yellow, reddish yellow, and dark greenish gray sandy loam saprolite

*Bedrock layer:* Soft hornblende schist and gneiss underlain by hard, fractured mafic crystalline rock, mainly hornblende schist

*Depth:* Shallow

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 45 percent

*Parent material:* Material weathered from mafic crystalline rocks

#### Enon

*Surface layer:* Dark grayish brown fine sandy loam

*Subsurface layer:* Light olive brown fine sandy loam

*Subsoil (upper part):* Light olive brown clay loam

*Subsoil (middle part):* Yellowish brown clay that has mottles in shades of olive

*Subsoil (lower part):* Mixed yellowish brown, strong brown, and olive brown clay

*Underlying material:* Yellowish brown, strong brown, olive, yellowish red, and black sandy loam saprolite

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from mafic or mixed felsic to mafic crystalline rocks

#### Helena

*Surface layer:* Dark grayish brown sandy loam

*Subsurface layer:* Light yellowish brown sandy loam that has mottles in shades of yellow

*Subsoil (upper part):* Light yellowish brown sandy clay loam that has mottles in shades of yellow

*Subsoil (next part):* Light yellowish brown clay that has mottles in shades of brown, red, and gray

*Subsoil (next part):* Mottled light yellowish brown, yellowish brown, red, light gray, and reddish yellow clay

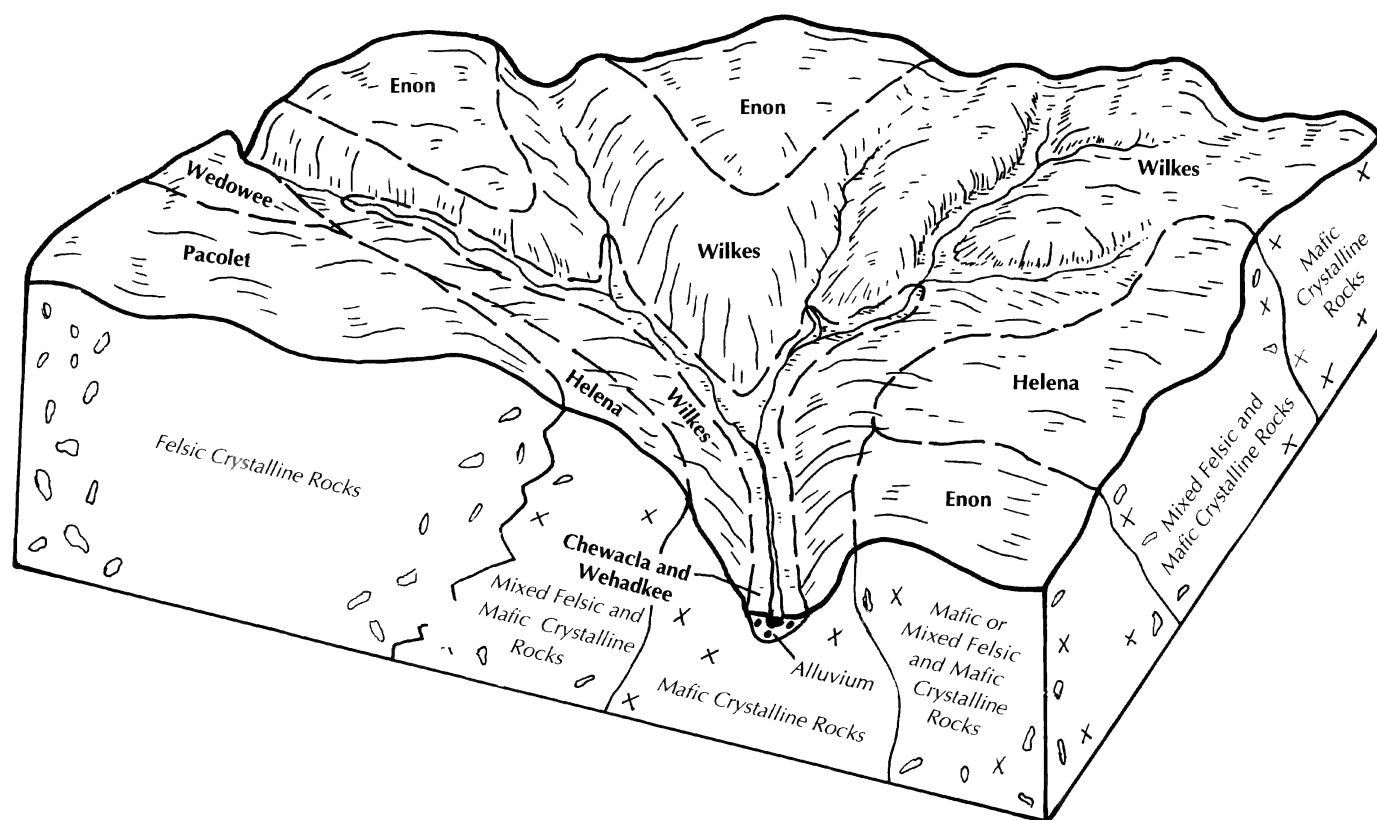


Figure 3.—Typical relationship of soils, landscape, and geology in the Wilkes-Enon-Helena and Pacolet-Wedowee general soil map units.

*Subsoil (next part):* Light gray clay loam that has mottles in shades of red, brown, and yellow

*Subsoil (lower part):* Mottled light gray, strong brown, brownish yellow, and red clay loam

*Underlying material:* White loam saprolite that has pockets of clay loam and mottles in shades of brown

*Depth:* Very deep

*Drainage class:* Moderately well drained

*Seasonal high water table:* 1.5 to 2.5 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from mixed felsic and mafic crystalline rocks

#### **Minor Soils**

- Vance soils that formed in acid bedrock, on dissected ridges
- The somewhat poorly drained or moderately well drained Orange soils on the smoother ridges at the head of drainageways
- Mecklenburg soils having a subsoil that is redder than that of the major soils, on slightly higher knolls
- Wedowee and Rion soils that formed in acid bedrock, in scattered areas
- The somewhat poorly drained Chewacla and poorly drained Wehadkee soils on flood plains

#### **Use and Management**

**Uses:** Woodland and small areas of pasture or cropland

#### **Cropland**

*Suitability:* Wilkes—poorly suited; Enon and Helena—moderately suited

*Management concerns:* Depth to bedrock in the Wilkes soils, the heavy clay subsoil in the Enon soils, and wetness in the Helena soils

#### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Depth to bedrock in the Wilkes soils, the heavy clay subsoil in the Enon soils, and wetness in the Helena soils

#### **Woodland**

*Suitability:* Well suited

*Management concerns:* None

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Depth to bedrock and the slope of the Wilkes soils, shrink-swell potential and restricted permeability in the Enon soils, and wetness in the Helena soils

### **3. Lignum-Orange**

*Nearly level to moderately sloping, somewhat poorly drained or moderately well drained soils that have a clayey subsoil; on Piedmont uplands*

#### **Setting**

*Location in the county:* Eastern part

*Landscape position:* Very broad to narrow ridges and moderately narrow side slopes (fig. 4)

*Slope:* 0 to 7 percent

#### **Composition**

*Percent of the county:* 18

*Extent of components in the map unit:*

Lignum soils—53 percent

Orange soils—24 percent

Minor soils—23 percent

#### **Soil Characteristics**

##### **Lignum**

*Surface layer:* Light yellowish brown loam

*Subsoil (upper part):* Brownish yellow silty clay loam that has mottles in shades of red

*Subsoil (middle part):* Yellowish brown clay that has mottles in shades of gray, brown, and red

*Subsoil (lower part):* Light gray clay that has mottles in shades of brown, yellow, and red

*Underlying material:* Mottled yellowish brown, light gray, pale olive, and strong brown silt loam saprolite

*Bedrock layer:* Soft, dark colored schist

*Depth:* Deep

*Drainage class:* Moderately well drained or somewhat poorly drained

*Seasonal high water table:* 1.0 to 2.5 feet below the surface

*Slope:* 2 to 6 percent

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

##### **Orange**

*Surface layer:* Dark yellowish brown gravelly loam

*Subsurface layer:* Light yellowish brown gravelly loam

*Subsoil (upper part):* Yellowish brown clay that has mottles in shades of red and brown

*Subsoil (lower part):* Yellowish brown clay that has mottles in shades of gray and red

*Underlying material:* Mottled yellowish brown, light gray, strong brown, and red silt loam

*Bedrock layer:* Soft, multicolored diorite and gabbro underlain by hard diorite-gabbro rock

*Depth:* Deep

*Drainage class:* Somewhat poorly drained or moderately well drained

*Seasonal high water table:* 1.0 to 3.0 feet below the surface

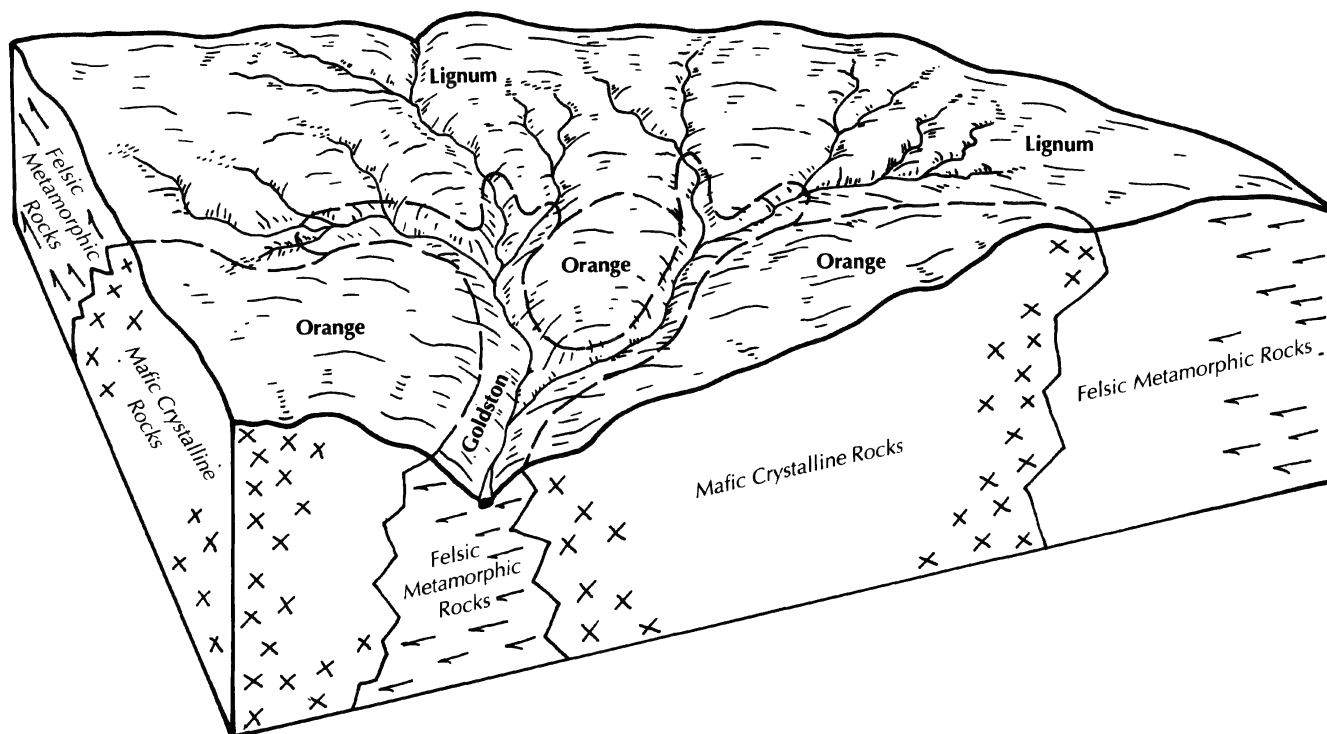


Figure 4.—Typical relationship of soils, landscape, and geology in the Lignum-Orange general soil map unit.

*Slope:* 0 to 7 percent

*Parent material:* Material weathered from mafic crystalline rocks

#### **Minor Soils**

- The well drained Georgeville and Herndon soils on high ridges and knolls
- The shallow Goldston soils on short side slopes
- Tatum soils having a subsoil that is redder than that of the major soils, on side slopes
- The somewhat poorly drained Chewacla and poorly drained Wehadkee soils on flood plains

#### **Use and Management**

**Uses:** Mainly woodland

#### **Cropland**

*Suitability:* Poorly suited

*Management concerns:* Wetness and restricted permeability

#### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Wetness

#### **Woodland**

*Suitability:* Well suited

*Management concerns:* None

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Wetness, restricted permeability, and shrink-swell potential

### **4. Appling-Wedowee-Cecil**

*Gently sloping to moderately steep, well drained soils that have a clayey subsoil; on Piedmont uplands*

#### **Setting**

*Location in the county:* Central part; smaller areas scattered throughout the county

*Landscape position:* Broad to narrow ridges and side slopes (fig. 5)

*Slope:* 2 to 25 percent

#### **Composition**

*Percent of the county:* 17

*Extent of components in the map unit:*

Appling soils—37 percent

Wedowee soils—35 percent

Cecil soils—11 percent

Minor soils—17 percent

### Soil Characteristics

#### Appling

*Surface layer:* Brown sandy loam

*Subsoil (upper part):* Light yellowish brown sandy loam

*Subsoil (next part):* Yellowish brown clay that has mottles in shades of red and yellow

*Subsoil (next part):* Strong brown clay that has mottles in shades of red and yellow

*Subsoil (lower part):* Mixed yellowish red, strong brown, and yellowish brown sandy clay loam

*Underlying material:* Red, strong brown, yellowish brown, white, and olive gray sandy clay loam saprolite

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from felsic crystalline rocks

#### Wedowee

*Surface layer:* Yellowish brown sandy loam

*Subsoil (upper part):* Yellowish brown sandy clay loam

*Subsoil (middle part):* Yellowish red clay that has mottles in shades of brown, yellow, and red

*Subsoil (lower part):* Yellowish red sandy clay loam that has pockets of sandy loam saprolite and mottles in shades of brown and yellow

*Underlying material:* Yellowish red, strong brown, yellow, white, and pink sandy loam saprolite

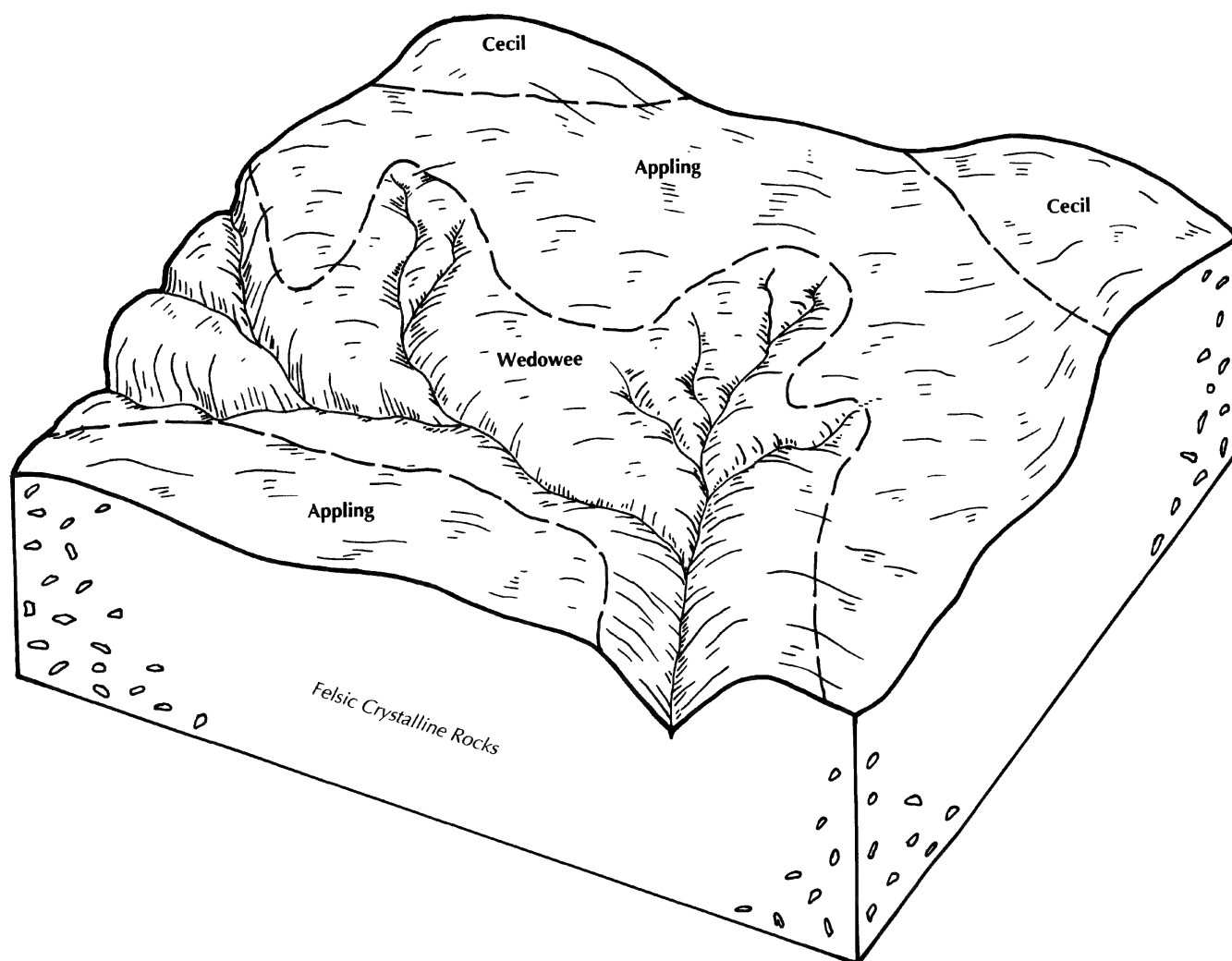


Figure 5.—Typical relationship of soils, landscape, and geology in the Appling-Wedowee-Cecil general soil map unit.



*Depth:* Very deep  
*Drainage class:* Well drained  
*Seasonal high water table:* More than 6 feet below the surface  
*Slope:* 2 to 25 percent  
*Parent material:* Material weathered from felsic crystalline rocks

#### **Cecil**

*Surface layer:* Brown sandy loam  
*Subsoil (upper part):* Strong brown clay loam  
*Subsoil (middle part):* Red clay that has mottles in shades of red and brown  
*Subsoil (lower part):* Red clay loam  
*Underlying material:* Reddish yellow fine sandy loam saprolite that has mottles in shades of yellow and pink  
*Depth:* Very deep  
*Drainage class:* Well drained  
*Seasonal high water table:* More than 6 feet below the surface  
*Slope:* 2 to 10 percent  
*Parent material:* Material weathered from felsic crystalline rocks

#### **Minor Soils**

- The moderately well drained Helena soils in depressions and at the head of drainageways
- Vance soils that have a very firm subsoil, on dissected ridges; associated with the Appling soils
- Rion soils having a subsoil that has less clay than those of the major soils, on steep slopes
- Areas of bouldery Wedowee soils on ridges adjacent to side slopes, identified by a (#) symbol on the general soil map
- The somewhat poorly drained Chewacla and poorly drained Wehadkee soils on flood plains

#### **Use and Management**

**Uses:** Cropland, pasture and hayland, and woodland

#### **Cropland**

*Suitability:* Well suited on slopes of less than 15 percent  
*Management concerns:* Hazard of erosion

#### **Pasture and hayland**

*Suitability:* Well suited  
*Management concerns:* None

#### **Woodland**

*Suitability:* Well suited  
*Management concerns:* None

#### **Urban development**

*Suitability:* Well suited on slopes of less than 15 percent and moderately suited on slopes of more than 15 percent  
*Management concerns:* The slope

## **5. Helena-Vance**

*Gently sloping and moderately sloping, somewhat poorly drained or moderately well drained soils that have a clayey subsoil; on Piedmont uplands*

### **Setting**

*Location in the county:* Southwestern part  
*Landscape position:* Broad interstream divides, smaller ridges, and long side slopes (fig. 6)  
*Slope:* 2 to 10 percent

### **Composition**

*Percent of the county:* 11  
*Extent of components in the map unit:*  
 Helena soils—42 percent  
 Vance soils—36 percent  
 Minor soils—22 percent

### **Soil Characteristics**

#### **Helena**

*Surface layer:* Dark grayish brown sandy loam  
*Subsurface layer:* Light yellowish brown sandy loam that has mottles in shades of yellow  
*Subsoil (upper part):* Light yellowish brown sandy clay loam that has mottles in shades of yellow  
*Subsoil (next part):* Light yellowish brown clay that has mottles in shades of brown, red, and gray  
*Subsoil (next part):* Mottled light yellowish brown, yellowish brown, red, light gray, and reddish yellow clay  
*Subsoil (next part):* Light gray clay loam that has mottles in shades of red, brown, and yellow  
*Subsoil (lower part):* Mottled light gray, strong brown, brownish yellow, and red clay loam  
*Underlying material:* White loam saprolite that has pockets of clay loam and mottles in shades of brown

*Depth:* Very deep  
*Drainage class:* Moderately well drained  
*Seasonal high water table:* 1.5 to 2.5 feet below the surface  
*Slope:* 2 to 10 percent  
*Parent material:* Material weathered from mixed felsic and mafic crystalline rocks

#### **Vance**

*Surface layer:* Yellowish brown sandy loam  
*Subsoil (upper part):* Yellowish brown clay loam that has mottles in shades of yellow  
*Subsoil (middle part):* Yellowish brown clay that has mottles in shades of yellow and red  
*Subsoil (lower part):* Mixed yellowish red, yellow, yellowish brown, and white clay loam  
*Underlying material:* Yellowish red, reddish yellow, and white loam saprolite

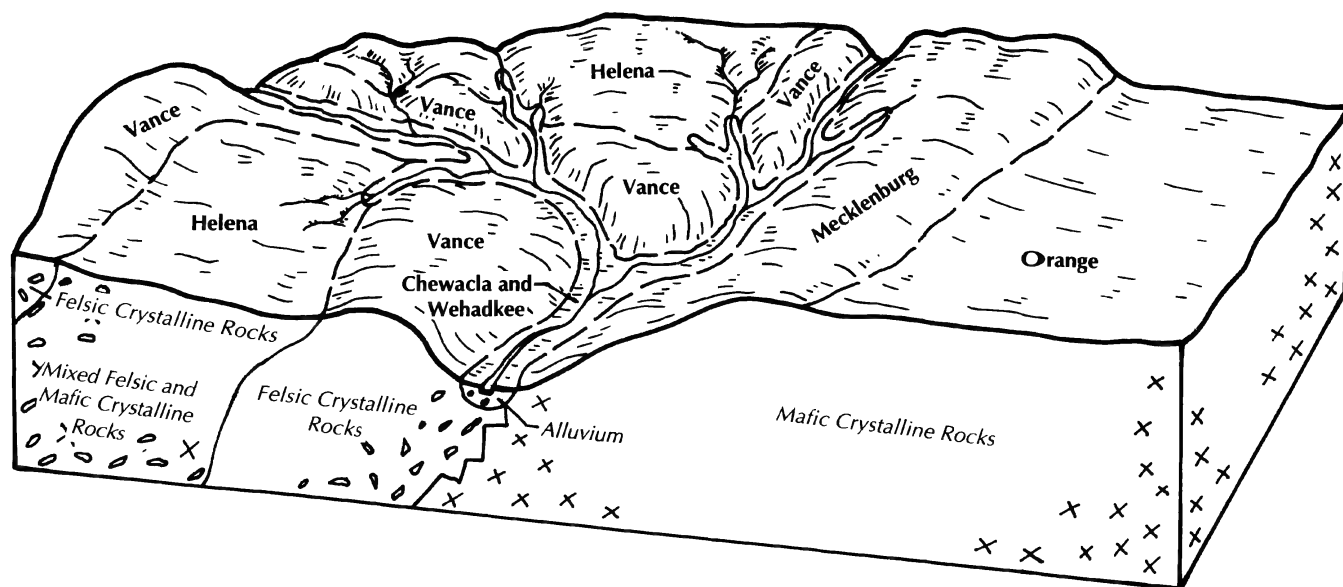


Figure 6.—Typical relationship of soils, landscape, and geology in the Helena-Vance, Orange-Mecklenburg, and Chewacla-Wehadkee general soil map units.

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from felsic crystalline rocks

#### Minor Soils

- The somewhat poorly drained Chewacla and poorly drained Wehadkee soils on flood plains
- The less acid Sedgefield and Enon soils in areas underlain by mafic crystalline rock
- The well drained Appling and Cecil soils on the higher ridges and knolls
- The shallow Wilkes soils on side slopes
- The well drained Wedowee soils on the steeper side slopes

#### Use and Management

**Uses:** Mainly woodland

#### Cropland

*Suitability:* Moderately suited

*Management concerns:* Wetness, restricted permeability, and shrink-swell potential

#### Pasture and hayland

*Suitability:* Well suited

*Management concerns:* Wetness in the Helena soils

#### Woodland

*Suitability:* Well suited

*Management concerns:* None

#### Urban development

*Suitability:* Helena—poorly suited; Vance—moderately suited

*Management concerns:* Wetness, restricted permeability, and shrink-swell potential

## 6. Pacolet-Wedowee

*Gently sloping to moderately steep, well drained soils that have a clayey subsoil; on Piedmont uplands*

#### Setting

*Location in the county:* Northwestern part

*Landscape position:* Moderately broad to narrow ridges and side slopes (fig. 3)

*Slope:* 2 to 25 percent

#### Composition

*Percent of the county:* 3

*Extent of components in the map unit:*

Pacolet soils—44 percent

Wedowee soils—40 percent

Minor soils—16 percent

## Soil Characteristics

### Pacolet

*Surface layer:* Yellowish red clay loam

*Subsoil:* Red clay

*Underlying material:* Red loam saprolite underlain by red, strong brown, brownish yellow, and white loam saprolite

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from felsic crystalline rocks

### Wedowee

*Surface layer:* Yellowish brown sandy loam

*Subsoil (upper part):* Yellowish brown sandy clay loam

*Subsoil (middle part):* Yellowish red clay that has mottles in shades of brown, yellow, and red

*Subsoil (lower part):* Yellowish red sandy clay loam that has pockets of sandy loam saprolite and mottles in shades of brown and yellow

*Underlying material:* Yellowish red, strong brown, yellow, white, pink, and reddish yellow sandy loam saprolite

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 25 percent

*Parent material:* Material weathered from felsic crystalline rocks

### Minor Soils

- The moderately well drained Helena soils in depressions and at the head of drainageways
- Vance soils that have a very firm subsoil, on dissected ridges
- The somewhat poorly drained Chewacla and poorly drained Wehadkee soils on flood plains

## Use and Management

**Uses:** Cropland, pasture and hayland, and woodland

### Cropland

*Suitability:* Well suited on slopes of less than 15 percent

*Management concerns:* Hazard of erosion

### Pasture and hayland

*Suitability:* Well suited

*Management concerns:* None

### Woodland

*Suitability:* Well suited

*Management concerns:* None

## Urban development

*Suitability:* Well suited on slopes of less than 15 percent and moderately suited on slopes of more than 15 percent

*Management concerns:* The slope

## 7. Orange-Mecklenburg

*Nearly level to moderately sloping, somewhat poorly drained or moderately well drained soils that have a clayey subsoil; on Piedmont uplands*

## Setting

*Location in the county:* Southwestern part

*Landscape position:* Broad ridges and narrow ridges adjacent to drainageways (fig. 6)

*Slope:* 0 to 10 percent

## Composition

*Percent of the county:* 3

*Extent of components in the map unit:*

Orange soils—40 percent

Mecklenburg soils—32 percent

Minor soils—28 percent

## Soil Characteristics

### Orange

*Surface layer:* Dark yellowish brown gravelly loam

*Subsurface layer:* Light yellowish brown gravelly loam

*Subsoil (upper part):* Yellowish brown clay that has mottles in shades of red and brown

*Subsoil (lower part):* Yellowish brown clay that has mottles in shades of gray and red

*Underlying material:* Mottled yellowish brown, light gray, strong brown, and red silt loam

*Bedrock layer:* Soft, multicolored diorite and gabbro underlain by hard diorite-gabbro

*Depth:* Deep

*Drainage class:* Somewhat poorly drained or moderately well drained

*Seasonal high water table:* 1.0 to 3.0 feet below the surface

*Slope:* 0 to 7 percent

*Parent material:* Material weathered from mafic crystalline rocks

### Mecklenburg

*Surface layer:* Brown loam

*Subsoil (upper part):* Yellowish red clay

*Subsoil (middle part):* Yellowish red clay that has mottles in shades of red

*Subsoil (lower part):* Yellowish red clay that has mottles in shades of brown, red, and white

*Underlying material:* Strong brown, brownish yellow, yellowish red, red, and white loam saprolite

*Bedrock layer:* Soft schist

*Depth:* Very deep

*Drainage class:* Well drained

*Seasonal high water table:* More than 6 feet below the surface

*Slope:* 2 to 10 percent

*Parent material:* Material weathered from mafic crystalline rocks

#### **Minor Soils**

- The well drained Enon and Vance soils on high ridges and knolls
- The shallow Wilkes soils on short side slopes
- The somewhat poorly drained Chewacla and poorly drained Wehadkee soils on flood plains

#### **Use and Management**

**Uses:** Mainly woodland; some cropland in areas of the Mecklenburg soils

#### **Cropland**

*Suitability:* Orange—moderately suited; Mecklenburg—well suited

*Management concerns:* Wetness and restricted permeability in the Orange soils

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Wetness in the Orange soils

#### **Woodland**

*Suitability:* Well suited

*Management concerns:* None

#### **Urban development**

*Suitability:* Orange—poorly suited; Mecklenburg—moderately suited

*Management concerns:* Wetness, restricted permeability, and shrink-swell potential

## **8. Chewacla-Wehadkee**

*Nearly level, poorly drained or somewhat poorly drained soils that have a loamy subsoil; on flood plains*

#### **Setting**

*Location in the county:* Western and north-central parts

*Landscape position:* Broad to moderately narrow flood plains (fig. 6)

*Slope:* 0 to 2 percent

#### **Composition**

*Percent of the county:* 2

*Extent of components in the map unit:*

Chewacla soils—50 percent

Wehadkee soils—35 percent

Minor soils—15 percent

#### **Soil Characteristics**

##### **Chewacla**

*Surface layer:* Brown loam

*Subsoil (upper part):* Brown loam that has mottles in shades of brown

*Subsoil (next part):* Light olive brown loam that has mottles in shades of brown

*Subsoil (next part):* Dark gray clay loam that has mottles in shades of brown

*Subsoil (lower part):* Mottled gray, yellowish brown, and light gray sandy clay loam

*Underlying material:* Mottled light gray, grayish brown, gray, and yellowish brown sandy loam that has thin strata of sand

*Depth:* Very deep

*Drainage class:* Somewhat poorly drained

*Seasonal high water table:* 0.5 foot to 1.5 feet below the surface

*Slope:* 0 to 2 percent

*Parent material:* Recent alluvium derived from material weathered from igneous and metamorphic rocks

##### **Wehadkee**

*Surface layer:* Dark grayish brown loam

*Subsoil (upper part):* Gray sandy clay loam that has mottles in shades of brown

*Subsoil (lower part):* Light gray loam that has mottles in shades of brown

*Underlying material:* Light gray loam that has mottles in shades of brown and gray

*Depth:* Very deep

*Drainage class:* Poorly drained

*Seasonal high water table:* within 1 foot of the surface

*Slope:* 0 to 2 percent

*Parent material:* Recent alluvium derived from material weathered from igneous and metamorphic rocks

##### **Minor Soils**

- The well drained Wickham soils at the slightly higher elevations

#### **Use and Management**

**Uses:** Mainly woodland; a few areas of pasture

#### **Cropland**

*Suitability:* Poorly suited

*Management concerns:* Flooding and wetness

#### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Wetness and flooding

**Woodland**

*Suitability:* Moderately suited

*Management concerns:* Flooding and wetness; limited use of equipment

**Urban development**

*Suitability:* Unsited

*Management concerns:* Flooding and wetness



# Detailed Soil Map Units

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The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of the dominant soils within the map unit for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit is given under the heading "Use and Management of the Soils."

The map units on the detailed soil maps represent areas on the landscape and consist mainly of the dominant soils for which the units are named.

Symbols identifying the soils precede the map unit names in the map unit descriptions. The descriptions include general facts about the soils and give the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are named as phases of soil series. The name of a soil phase commonly indicates a feature or features that affect use or management. For example, Appling sandy loam, 2 to 6 percent slopes, is a map unit of the Appling series that identifies surface texture and slope group as the dominant soil features affecting use or management.

Some map units are made up of two or more major soils. These map units are called soil complexes or undifferentiated groups.

A *soil complex* consists of two or more contrasting soils, or miscellaneous land areas, in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas.

Helena-Sedgefield sandy loams, 2 to 6 percent slopes, is an example.

An *undifferentiated group* is made up of two or more dominant soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Chewacla and Wehadkee loams, frequently flooded, is an undifferentiated group in the county.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils may be identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Urban land is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and suitabilities for many uses. The "Glossary" defines many of the terms used in describing the soils.

## ApB—Appling sandy loam, 2 to 6 percent slopes

### Setting

*Landscape position:* Smooth upland ridges

*Shape and size of areas:* Oblong and irregular in width; about 20 to 80 acres in size

### Composition

Appling and similar soils: 80 percent

Contrasting inclusions: 20 percent

### **Typical Profile**

*Surface layer:*

0 to 6 inches—brown sandy loam

*Subsoil:*

6 to 10 inches—light yellowish brown sandy loam

10 to 28 inches—yellowish brown clay that has mottles in shades of red and yellow

28 to 39 inches—strong brown clay that has mottles in shades of red and yellow

39 to 46 inches—mixed yellowish red, strong brown, and yellowish brown sandy clay loam

*Underlying material:*

46 to 66 inches—red, strong brown, yellowish brown, white, and olive gray sandy clay loam saprolite

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium or rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### **Inclusions**

*Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- Wedowee soils, which have a subsoil that is thinner than that of the Appling soil; on shoulder slopes
- The moderately well drained Helena soils in depressions and at the head of drainageways

*Similar inclusions:*

- Small areas of Appling soils that have a gravelly surface layer or a surface layer of sandy clay loam
- Soils having a subsoil that is redder than that of the Appling soil

### **Use and Management**

**Uses:** Cropland, pasture and hayland, and urban development

#### **Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping (fig. 7), contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Well suited

*Management concerns:* Restricted permeability and low strength

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

### **Interpretive Groups**

*Land capability classification:* 11e

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **ApC—Appling sandy loam, 6 to 10 percent slopes**

### **Setting**

*Landscape position:* Narrow upland ridges and side slopes along drainageways

*Shape and size of areas:* Elongated and irregular in width; about 20 to 50 acres in size

### **Composition**

Appling and similar soils: 80 percent





Figure 7.—Contour stripcropping in an area of Appling sandy loam, 2 to 6 percent slopes.

Contrasting inclusions: 20 percent

### ***Typical Profile***

#### ***Surface layer:***

0 to 6 inches—brown sandy loam

#### ***Subsoil:***

6 to 10 inches—light yellowish brown sandy loam

10 to 28 inches—yellowish brown clay that has mottles in shades of red and yellow

28 to 39 inches—strong brown clay that has mottles in shades of red and yellow

39 to 46 inches—mixed yellowish red, strong brown, and yellowish brown sandy clay loam

#### ***Underlying material:***

46 to 66 inches—red, strong brown, yellowish brown, white, and olive gray sandy clay loam saprolite

### ***Soil Properties and Qualities***

***Depth:*** Very deep

***Drainage class:*** Well drained

***Permeability:*** Moderate

***Available water capacity:*** Moderate

***Seasonal high water table:*** More than 6 feet below the surface

***Flooding:*** None

***Shrink-swell potential:*** Low

*Erosion hazard:* Severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- Wedowee soils, which have a subsoil that is thinner than that of the Appling soil; on shoulder slopes

*Similar inclusions:*

- Small areas of Appling soils that have a gravelly surface layer or a surface layer of sandy clay loam
- Soils having a subsoil that is redder than that of the Appling soil

### ***Use and Management***

**Uses:** Cropland, pasture and hayland, and woodland

#### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard, surface runoff, and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and surface runoff

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Restricted permeability, slope, and low strength

*Management measures:*

- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets. The roads should be designed so that they conform to the natural slope of the land.

### ***Interpretive Groups***

*Land capability classification:* IIIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **AuB—Appling-Urban land complex, 2 to 10 percent slopes**

### ***Setting***

*Landscape position:* Upland ridges and side slopes

*Shape and size of areas:* Irregular in width; about 25 to 150 acres in size

### ***Composition***

Appling and similar soils: 50 percent

Urban land: 30 percent

Contrasting inclusions: 20 percent

### ***Typical Profile***

#### **Appling**

*Surface layer:*

0 to 6 inches—brown sandy loam

*Subsoil:*

6 to 10 inches—light yellowish brown sandy loam

10 to 28 inches—yellowish brown clay that has mottles in shades of red and yellow

28 to 39 inches—strong brown clay that has mottles in shades of red and yellow

39 to 46 inches—mixed yellowish red, strong brown, and yellowish brown sandy clay loam

*Underlying material:*

46 to 66 inches—red, strong brown, yellowish brown, white, and olive gray sandy clay loam saprolite

### ***Characteristics of the Urban land***

- These areas are covered by roads, parking lots, closely spaced buildings, and other urban structures. Identification of the soil series is not feasible.

### **Soil Properties and Qualities**

#### **Appling**

*Depth:* Very deep  
*Drainage class:* Well drained  
*Permeability:* Moderate  
*Available water capacity:* Moderate  
*Seasonal high water table:* More than 6 feet below the surface  
*Flooding:* None  
*Shrink-swell potential:* Low  
*Erosion hazard:* Severe  
*Slope class:* Gently sloping and moderately sloping  
*Surface runoff:* Rapid  
*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

#### **Inclusions**

##### *Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- Wedowee soils, which have a subsoil that is thinner than that of the Appling soil; on shoulder slopes
- The moderately well drained Helena soils in depressions and at the head of drainageways
- Small areas of Appling soils that have scattered granitic boulders on the surface
- Areas of cut and fill material

##### *Similar inclusions:*

- Small areas of Appling soils that have a gravelly surface layer or a surface layer of sandy clay loam
- Soils having a subsoil that is redder than that of the Appling soil

#### **Use and Management**

**Uses:** Urban development, homesites, and gardens

#### **Urban development**

*Suitability:* Well suited or moderately suited

*Management concerns:* Slope, restricted permeability, and low strength

##### *Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

#### **Interpretive Groups**

*Land capability classification:* Appling—IIIe; Urban land—VIIIs

*Woodland ordination symbol:* None

### **CeB—Cecil sandy loam, 2 to 6 percent slopes**

#### **Setting**

*Landscape position:* Smooth upland ridges

*Shape and size of areas:* Oblong and irregular in width; about 25 to 75 acres in size

#### **Composition**

Cecil and similar soils: 80 percent

Contrasting inclusions: 20 percent

#### **Typical Profile**

##### *Surface layer:*

0 to 7 inches—brown sandy loam

##### *Subsoil:*

7 to 12 inches—strong brown clay loam

12 to 20 inches—red clay that has mottles in shades of red and brown

20 to 43 inches—red clay that has mottles in shades of brown

43 to 52 inches—red clay loam

##### *Underlying material:*

52 to 64 inches—reddish yellow fine sandy loam

saprolite that has mottles in shades of yellow and pink

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Moderate or rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

#### **Inclusions**

##### *Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges

##### *Similar inclusions:*

- Small areas of Cecil soils that have a surface layer of loam or clay loam
- Soils that have a brown subsoil

#### **Use and Management**

**Uses:** Cropland, pasture and hayland, and urban development

**Cropland***Suitability:* Well suited*Management concerns:* Erosion hazard and clayey subsoil*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

**Pasture and hayland***Suitability:* Well suited*Management concerns:* Erosion hazard*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland***Suitability:* Well suited*Productivity:* Moderately high*Management concerns:* Slight limitations*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

**Urban development***Suitability:* Well suited*Management concerns:* Restricted permeability, low strength, and corrosivity*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

**Interpretive Groups***Land capability classification:* IIe*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species**CeC—Cecil sandy loam, 6 to 10 percent slopes****Setting***Landscape position:* Narrow upland ridges and side slopes*Shape and size of areas:* Long and narrow and irregular in width; about 10 to 40 acres in size**Composition**

Cecil and similar soils: 85 percent

Contrasting inclusions: 15 percent

**Typical Profile***Surface layer:*

0 to 7 inches—brown sandy loam

*Subsoil:*

7 to 12 inches—strong brown clay loam

12 to 20 inches—red clay that has mottles in shades of red and brown

20 to 43 inches—red clay that has mottles in shades of brown

43 to 52 inches—red clay loam

*Underlying material:*

52 to 64 inches—reddish yellow fine sandy loam

saprolite that has mottles in shades of yellow and pink

**Soil Properties and Qualities***Depth:* Very deep*Drainage class:* Well drained*Permeability:* Moderate*Available water capacity:* Moderate*Seasonal high water table:* More than 6 feet below the surface*Flooding:* None*Shrink-swell potential:* Low*Erosion hazard:* Moderate*Slope class:* Moderately sloping*Surface runoff:* Rapid*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches**Inclusions***Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- Pacolet soils, which have a eroded surface layer and have a subsoil that is thinner than that of the Cecil soil; on dissected knolls and shoulder slopes

*Similar inclusions:*

- Small areas of Cecil soils that have a surface layer of sandy clay loam
- Soils that have a brown subsoil

**Use and Management****Uses:** Woodland, pasture and hayland, and some areas of cropland

### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard, surface runoff, and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and surface runoff

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Restricted permeability, slope, and low strength

*Management measures:*

- Increasing the size of the absorption area of the septic tank absorption field and installing the distribution lines on the contour improve the performance.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

### **Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **Cw—Chewacla and Wehadkee loams, frequently flooded**

### **Setting**

*Landform:* Flood plains

*Landscape position:* Chewacla—the slightly higher ridges; Wehadkee—the lower swales

*Shape and size of areas:* Broad to narrow and long or irregularly shaped; about 10 to 1,000 acres in size

### **Composition**

Chewacla and similar soils: 50 to 80 percent

Wehadkee soil: 10 to 70 percent

Contrasting inclusions: 10 to 40 percent

### **Typical Profile**

#### **Chewacla**

*Surface layer:*

0 to 9 inches—brown loam

*Subsoil:*

9 to 21 inches—brown loam that has mottles in shades of brown

21 to 33 inches—light olive brown loam that has mottles in shades of brown

33 to 49 inches—dark gray clay loam that has mottles in shades of brown

49 to 58 inches—mottled gray, yellowish brown, and light gray sandy clay loam

*Underlying material:*

58 to 72 inches—mottled light gray, grayish brown, gray, and yellowish brown sandy loam that has thin strata of sand

#### **Wehadkee**

*Surface layer:*

0 to 3 inches—dark grayish brown loam

*Subsoil:*

3 to 10 inches—gray sandy clay loam that has mottles in shades of brown

10 to 34 inches—light gray loam that has mottles in shades of brown

*Underlying material:*

34 to 60 inches—light gray loam that has mottles in shades of brown and gray

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Chewacla—somewhat poorly drained; Wehadkee—poorly drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* Chewacla—0.5 foot to 1.5 feet below the surface during the period November through April; Wehadkee—within 1 foot of the

surface during the period November through May  
*Flooding:* Chewacla—frequently flooded for brief periods from November through April; Wehadkee—frequently flooded for brief periods from November through June

*Shrink-swell potential:* Low

*Erosion hazard:* None or slight

*Slope class:* Nearly level

*Surface runoff:* Chewacla—slow; Wehadkee—very slow

### ***Inclusions***

*Contrasting inclusions:*

- The moderately well drained Helena soils at the head of drainageways
- The well drained Wickham soils on low stream terraces
- A very deep, clayey soil along Deep Creek and Marlowes Creek

### ***Use and Management***

**Uses:** Woodland and wildlife habitat

#### **Cropland**

*Suitability:* Chewacla—poorly suited; Wehadkee—unsuited

*Management concerns:* Frequent flooding and wetness

*Management measures:*

- A better suited soil should be selected.

#### **Pasture**

*Suitability:* Poorly suited

*Management concerns:* Frequent flooding and wetness

*Management measures:*

- A better suited soil should be selected.

#### **Woodland**

*Suitability:* Chewacla—moderately suited; Wehadkee—poorly suited

*Management concerns:* Frequent flooding and wetness; limited use of equipment

*Management measures:*

- Using heavy equipment only during dry periods helps to prevent compaction and root damage.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Harrowing and bedding reduce the seedling mortality rate.

#### **Urban development**

*Suitability:* Unsuitable

*Management concerns:* Frequent flooding and wetness

*Management measures:*

- A better suited soil should be selected.

### ***Interpretive Groups***

*Land capability classification:* Chewacla—IVw; Wehadkee—VIw

*Woodland ordination symbol:* Based on loblolly pine as the indicator species, 7W in areas of the Chewacla soil and 8W in areas of the Wehadkee soil

### **EnB—Enon fine sandy loam, 2 to 6 percent slopes**

#### ***Setting***

*Landscape position:* Ridges and knolls

*Shape and size of areas:* Rounded or irregularly shaped; about 10 to 50 acres in size

#### ***Composition***

Enon and similar soils: 80 percent

Contrasting inclusions: 20 percent

#### ***Typical Profile***

*Surface layer:*

0 to 2 inches—dark grayish brown fine sandy loam

*Subsurface layer:*

2 to 4 inches—light olive brown fine sandy loam

*Subsoil:*

4 to 7 inches—light olive brown clay loam

7 to 27 inches—yellowish brown clay that has mottles in shades of olive

27 to 33 inches—mixed yellowish brown, strong brown, and olive brown clay

*Underlying material:*

33 to 64 inches—yellowish brown, strong brown, olive, yellowish red, and black sandy loam saprolite that has pockets of clay

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Available water capacity:* High

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* High

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium

*Bedrock type, depth:* Mafic or mixed felsic to mafic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Mecklenburg soils, which have moderate shrink-swell

potential; on the higher elevations along the outer edge of the map unit

- The somewhat poorly drained or moderately well drained Orange soils in depressions
- Vance soils, which have a subsoil that is more acid than that of the Enon soil; on small knolls
- The shallow Wilkes soils on shoulder slopes

*Similar inclusions:*

- Small areas of Enon soils that have an eroded surface layer of clay loam or clay

### ***Use and Management***

**Uses:** Woodland, pasture and hayland, and cropland  
**Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and a high content of clay

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

**Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

**Urban development**

*Suitability:* Poorly suited

*Management concerns:* Restricted permeability, shrink-swell potential, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.

- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

- Corrosion-resistant material is needed to protect uncoated steel.

### ***Interpretive Groups***

*Land capability classification:* IIe

*Woodland ordination symbol:* 7A, based on loblolly pine as the indicator species

## **EnC—Enon fine sandy loam, 6 to 10 percent slopes**

### ***Setting***

*Landscape position:* Upland ridges and side slopes

*Shape and size of areas:* Long and narrow; about 10 to 40 acres in size

### ***Composition***

Enon and similar soils: 85 percent

Contrasting inclusions: 15 percent

### ***Typical Profile***

*Surface layer:*

0 to 2 inches—dark grayish brown fine sandy loam

*Subsurface layer:*

2 to 4 inches—light olive brown fine sandy loam

*Subsoil:*

4 to 7 inches—light olive brown clay loam

7 to 27 inches—yellowish brown clay that has mottles in shades of olive

27 to 33 inches—mixed yellowish brown, strong brown, and olive brown clay

*Underlying material:*

33 to 64 inches—yellowish brown, strong brown, olive, yellowish red, and black sandy loam saprolite that has pockets of clay

### ***Soil Properties and Qualities***

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Available water capacity:* High

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* High

*Erosion hazard:* Severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Mafic or mixed felsic to mafic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

#### *Contrasting inclusions:*

- Mecklenburg soils, which have moderate shrink-swell potential; on the higher elevations along the outer edge of the map unit
- The shallow Wilkes soils on shoulder slopes

#### *Similar inclusions:*

- Small areas of Enon soils that have an eroded surface layer of clay loam or clay

### ***Use and Management***

**Uses:** Woodland, pasture and hayland, and cropland

#### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and a high content of clay

#### *Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

#### *Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

#### *Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Restricted permeability, shrink-swell potential, low strength, and corrosivity

#### *Management measures:*

- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Backfilling with coarse textured material strengthens

the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.

- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect uncoated steel.

### ***Interpretive Groups***

*Land capability classification:* IIIe

*Woodland ordination symbol:* 7A, based on loblolly pine as the indicator species

## **GeB—Georgeville loam, 2 to 6 percent slopes**

### ***Setting***

*Landscape position:* Smooth upland ridges

*Shape and size of areas:* Irregularly shaped; about 30 to 400 acres in size

### ***Composition***

Georgeville and similar soils: 80 percent

Contrasting inclusions: 20 percent

### ***Typical Profile***

#### *Surface layer:*

0 to 8 inches—brown loam

#### *Subsoil:*

8 to 49 inches—red clay that has mottles in shades of yellow

49 to 58 inches—red silty clay loam that has mottles in shades of yellow and red

#### *Underlying material:*

58 to 72 inches—mixed red, brownish yellow, and reddish yellow silt loam

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium

*Bedrock type, depth:* Fine grained felsic metamorphic rock, at a depth of more than 60 inches



### ***Inclusions***

#### *Contrasting inclusions:*

- Herndon soils, which have a browner subsoil than that of the Georgeville soil; in the smoother, slightly lower areas
- The somewhat poorly drained and moderately well drained Lignum soils in depressions and at the head of drainageways

#### *Similar inclusions:*

- Small areas of Georgeville soils that have an eroded surface layer of clay loam or clay or have a gravelly surface layer

### ***Use and Management***

**Uses:** Cropland, pasture and hayland, and small areas of woodland

#### **Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management (fig. 8) help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Well suited

*Management concerns:* Restricted permeability, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds

improve soil strength on sites for local roads and streets.

- Corrosion-resistant material is needed to protect concrete and uncoated steel.

### ***Interpretive Groups***

*Land capability classification:* IIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **GeC—Georgeville loam, 6 to 10 percent slopes**

### ***Setting***

*Landscape position:* Upland side slopes

*Shape and size of areas:* Long and irregularly shaped; about 20 to 100 acres in size

### ***Composition***

Georgeville and similar soils: 80 percent

Contrasting inclusions: 20 percent

### ***Typical Profile***

*Surface layer:*

0 to 8 inches—brown loam

*Subsoil:*

8 to 49 inches—red clay that has mottles in shades of yellow

49 to 58 inches—red silty clay loam that has mottles in shades of yellow and red

*Underlying material:*

58 to 72 inches—mixed red, brownish yellow, and reddish yellow silt loam

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Fine grained felsic metamorphic rock, at a depth of more than 60 inches

### ***Inclusions***

#### *Contrasting inclusions:*

- Herndon soils, which have a browner subsoil than that of the Georgeville soil; in the smoother, slightly lower areas



Figure 8.—A protective cover of crop residue in an area of Georgeville loam, 2 to 6 percent slopes.

- Tatum soils, which have soft bedrock within a depth of 60 inches; in the steeper areas
- The shallow Goldston soils in the steeper areas

*Similar inclusions:*

- Small areas of Georgeville soils that have an eroded surface layer of clay loam or clay or have a gravelly surface layer

***Use and Management***

**Uses:** Cropland, pasture and hayland, and small areas of woodland

**Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

**Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition and increase productivity.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland***Suitability:* Well suited*Productivity:* Moderately high*Management concerns:* Slight limitations*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

**Urban development***Suitability:* Moderately suited*Management concerns:* Restricted permeability, slope, low strength, and corrosivity*Management measures:*

- Increasing the size of the absorption area and installing distribution lines on the contour improves the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect concrete and uncoated steel.

**Interpretive Groups***Land capability classification:* IIIe*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species**GfB2—Georgeville clay loam, 2 to 6 percent slopes, eroded****Setting***Landscape position:* Smooth upland ridges and small knolls*Shape and size of areas:* Irregularly shaped; about 10 to 50 acres in size**Composition**

Georgeville and similar soils: 85 percent

Contrasting inclusions: 15 percent

**Typical Profile***Surface layer:*

0 to 4 inches—red clay loam

*Subsoil:*

4 to 49 inches—red clay that has mottles in shades of yellow

49 to 55 inches—red silty clay loam that has mottles in shades of yellow and red

*Underlying material:*

55 to 72 inches—mixed red, brownish yellow, and reddish yellow silt loam

**Soil Properties and Qualities***Depth:* Very deep*Drainage class:* Well drained*Permeability:* Moderate*Available water capacity:* Moderate*Seasonal high water table:* More than 6 feet below the surface*Flooding:* None*Shrink-swell potential:* Low*Erosion hazard:* Severe*Slope class:* Gently sloping*Surface runoff:* Medium*Bedrock type, depth:* Fine grained felsic metamorphic rock, at a depth of more than 60 inches**Inclusions***Contrasting inclusions:*

- Herndon soils, which have a browner subsoil than that of the Georgeville soil; in the smoother, slightly lower areas
- The shallow Goldston soils in the steeper areas

*Similar inclusions:*

- Small areas of Georgeville soils that have a gravelly surface layer

**Use and Management****Uses:** Cropland, pasture and hayland, and small areas of woodland**Cropland***Suitability:* Well suited*Management concerns:* Erosion hazard*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

**Pasture and hayland***Suitability:* Well suited*Management concerns:* Erosion hazard*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.

- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.
- A rotational grazing system, weed control, and a well planned clipping and harvesting schedule help to keep the pasture in good condition.

### **Woodland**

*Suitability:* Moderately suited

*Productivity:* Moderately high

*Management concerns:* Erosion hazard and seedling mortality

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

### **Urban development**

*Suitability:* Well suited

*Management concerns:* Restricted permeability, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect concrete and uncoated steel.

### **Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 6C, based on loblolly pine as the indicator species

## **GoC—Goldston channery silt loam, 4 to 15 percent slopes**

### **Setting**

*Landscape position:* Upland ridges and side slopes

*Shape and size of areas:* Long and irregularly shaped; about 10 to 50 acres in size

### **Composition**

Goldston and similar soils: 90 percent

Contrasting inclusions: 10 percent

### **Typical Profile**

*Surface layer:*

0 to 8 inches—brown channery silt loam

*Subsoil:*

8 to 18 inches—light yellowish brown very channery silt loam

*Bedrock:*

18 to 25 inches—soft, multicolored slate that can be dug by hand tools

25 inches—hard, fractured slate

### **Soil Properties and Qualities**

*Depth:* Shallow

*Drainage class:* Well drained to excessively drained

*Permeability:* Moderately rapid

*Available water capacity:* Very low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Severe

*Slope class:* Gently sloping to strongly sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Fine grained slate at a depth of 10 to 20 inches

### **Inclusions**

*Contrasting inclusions:*

- The very deep, clayey Herndon soils on side slopes near the outer edge of the map unit
- The somewhat poorly drained or moderately well drained Lignum soils in depressions and at the head of drainageways
- The deep, clayey Tatum soils in the steeper areas

*Similar inclusions:*

- Small areas of Goldston soils that have an eroded surface layer

### **Use and Management**

**Uses:** Woodland and small areas of pasture

#### **Cropland**

*Suitability:* Poorly suited

*Management concerns:* Rooting depth, a high content of rock fragments, very low available water capacity, and erosion hazard

*Management measures:*

- Returning crop residue to the soil helps to improve the available water capacity.
- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Very low available water capacity, rooting depth, and erosion hazard

**Management measures:**

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland***Suitability:* Well suited*Productivity:* Moderately high*Management concerns:* Seedling mortality*Management measures:*

- Keeping a layer of litter on the surface increases the available water capacity.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

**Urban development***Suitability:* Poorly suited*Management concerns:* Depth to bedrock and corrosivity*Management measures:*

- Septic tank absorption fields should be located in areas of inclusions that have suitable thickness, or suitable fill material is needed to increase the thickness of the absorption area.
- Corrosion-resistant material is needed to protect concrete.

**Interpretive Groups***Land capability classification:* IVs*Woodland ordination symbol:* 7D, based on shortleaf pine as the indicator species**GoF—Goldston channery silt loam, 15 to 45 percent slopes****Setting***Landscape position:* Upland side slopes and small mountainsides*Shape and size of areas:* Long and narrow; about 10 to 50 acres in size**Composition**

Goldston and similar soils: 90 percent

Contrasting inclusions: 10 percent

**Typical Profile***Surface layer:*

0 to 8 inches—brown channery silt loam

*Subsoil:*

8 to 18 inches—light yellowish brown very channery silt loam

*Bedrock:*

18 to 25 inches—soft, multicolored slate that can be dug by hand tools

25 inches—hard, fractured slate

**Soil Properties and Qualities***Depth:* Shallow*Drainage class:* Well drained to excessively drained*Permeability:* Moderately rapid*Available water capacity:* Very low*Seasonal high water table:* More than 6 feet below the surface*Flooding:* None*Shrink-swell potential:* Low*Erosion hazard:* Very severe*Slope class:* Moderately steep and steep*Surface runoff:* Very rapid*Bedrock type, depth:* Fine grained slate, at a depth of 10 to 20 inches**Inclusions***Contrasting inclusions:*

- The deep, clayey Tatum soils in scattered areas

*Similar inclusions:*

- Small areas of Goldston soils that have an eroded surface layer

**Use and Management****Uses:** Woodland and small areas of pasture**Cropland***Suitability:* Unsited*Management concerns:* Slope, rooting depth, a high content of rock fragments, very low available water capacity, and erosion hazard*Management measures:*

- A better suited soil should be selected.

**Pasture and hayland***Suitability:* Moderately suited*Management concerns:* Very low available water capacity, rooting depth, slope, and erosion hazard*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland***Suitability:* Moderately suited*Productivity:* Moderately high*Management concerns:* Erosion hazard, equipment limitation, and seedling mortality*Management measures:*

- Revegetating disturbed areas and installing water-control structures, such as culverts, broad-based dips, and water bars, help to control erosion.
- Skid trails and logging roads should be constructed on the contour or along natural slopes.
- Keeping a layer of litter on the surface increases the available water capacity.

**Urban development***Suitability:* Unsited*Management concerns:* Slope and depth to bedrock*Management measures:*

- A better suited soil should be selected.

**Interpretive Groups***Land capability classification:* VIIIs*Woodland ordination symbol:* 7R, based on shortleaf pine as the indicator species**HeB—Helena sandy loam, 2 to 6 percent slopes****Setting***Landscape position:* Smooth upland ridges and low areas at the head of drainageways*Shape and size of areas:* Oblong and irregular in width; about 10 to 80 acres in size**Composition**

Helena and similar soils: 80 percent

Contrasting inclusions: 20 percent

**Typical Profile***Surface layer:*

0 to 2 inches—dark grayish brown sandy loam

*Subsurface layer:*

2 to 5 inches—light yellowish brown sandy loam that has mottles in shades of yellow

*Subsoil:*

5 to 8 inches—light yellowish brown sandy clay loam that has mottles in shades of yellow

8 to 17 inches—light yellowish brown clay that has mottles in shades of brown, red, and gray

17 to 25 inches—mottled light yellowish brown, yellowish brown, red, light gray, and reddish yellow clay

25 to 39 inches—light gray clay loam that has mottles in shades of red, brown, and yellow

39 to 50 inches—mottled light gray, strong brown, brownish yellow, and red clay loam

*Underlying material:*

50 to 65 inches—white loam saprolite that has pockets of clay loam and mottles in shades of brown

**Soil Properties and Qualities***Depth:* Very deep*Drainage class:* Moderately well drained*Permeability:* Slow*Available water capacity:* Moderate*Seasonal high water table:* 1.5 to 2.5 feet below the surface during the period January through April*Flooding:* None*Shrink-swell potential:* High*Erosion hazard:* Moderate*Slope class:* Gently sloping*Surface runoff:* Medium or rapid*Bedrock type, depth:* Mixed felsic and mafic crystalline rocks, at a depth of more than 60 inches**Inclusions***Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- The well drained Appling soils on shoulder slopes and in the slightly higher areas
- Sedgfield soils, which are intermingled with areas of the Helena soil and have a subsoil that is less acid than that of the Helena soil
- The somewhat poorly drained and moderately well drained Lignum and Orange soils in depressions and at the head of drainageways

*Similar inclusions:*

- Small areas of eroded Helena soils that have a surface layer of sandy clay loam or clay loam

**Use and Management****Uses:** Cropland, hayland and pasture, and some areas of woodland**Cropland***Suitability:* Well suited*Management concerns:* Erosion hazard and wetness*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

**Pasture and hayland***Suitability:* Well suited*Management concerns:* Erosion hazard and wetness*Management measures:*

- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Wetness, restricted permeability, shrinking and swelling, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

#### **Interpretive Groups**

*Land capability classification:* IIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

### **HeC—Helena sandy loam, 6 to 10 percent slopes**

#### **Setting**

*Landscape position:* Smooth toe slopes and low areas at the head of drainageways

*Shape and size of areas:* Long and irregular in width; about 10 to 40 acres in size

#### **Composition**

Helena and similar soils: 80 percent

Contrasting inclusions: 20 percent

### **Typical Profile**

*Surface layer:*

0 to 2 inches—dark grayish brown sandy loam

*Subsurface layer:*

2 to 5 inches—light yellowish brown sandy loam that has mottles in shades of yellow

*Subsoil:*

5 to 8 inches—light yellowish brown sandy clay loam that has mottles in shades of yellow

8 to 17 inches—light yellowish brown clay that has mottles in shades of brown, red, and gray

17 to 25 inches—mottled light yellowish brown, yellowish brown, red, light gray, and reddish yellow clay

25 to 39 inches—light gray clay loam that has mottles in shades of red, brown, and yellow

39 to 50 inches—mottled light gray, strong brown, brownish yellow, and red clay loam

*Underlying material:*

50 to 65 inches—white loam saprolite that has pockets of clay loam and mottles in shades of brown

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Moderately well drained

*Permeability:* Slow

*Available water capacity:* Moderate

*Seasonal high water table:* 1.5 to 2.5 feet below the surface during the period January through April

*Flooding:* None

*Shrink-swell potential:* High

*Erosion hazard:* Severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Mixed felsic and mafic crystalline rocks, at a depth of more than 60 inches

### **Inclusions**

*Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- The well drained Wedowee soils on shoulder slopes and in the slightly higher areas
- The shallow Wilkes soils on shoulder slopes

*Similar inclusions:*

- Small areas of eroded Helena soils that have a surface layer of sandy clay loam or clay loam

### **Use and Management**

**Uses:** Pasture and hayland and some areas of cropland and woodland

#### **Cropland**

*Suitability:* Moderately suited



*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Wetness, restricted permeability, shrinking and swelling, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area and placing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

#### **Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

### **HfB—Helena-Sedgefield sandy loams, 2 to 6 percent slopes**

#### **Setting**

*Landscape position:* Smooth upland ridges and low areas at the head of drainageways

*Shape and size of areas:* Rounded or irregularly shaped; about 60 to 500 acres in size

#### **Composition**

Helena and similar soils: 50 percent

Sedgefield and similar soils: 30 percent

Contrasting inclusions: 20 percent

#### **Typical Profile**

##### **Helena**

*Surface layer:*

0 to 2 inches—dark grayish brown sandy loam

*Subsurface layer:*

2 to 5 inches—light yellowish brown sandy loam that has mottles in shades of yellow

*Subsoil:*

5 to 8 inches—light yellowish brown sandy clay loam that has mottles in shades of yellow

8 to 17 inches—light yellowish brown clay that has mottles in shades of brown, red, and gray

17 to 25 inches—mottled light yellowish brown, yellowish brown, red, light gray, and reddish yellow clay

25 to 39 inches—light gray clay loam that has mottles in shades of red, brown, and yellow

39 to 50 inches—mottled light gray, strong brown, brownish yellow, and red clay loam

*Underlying material:*

50 to 65 inches—white loam saprolite that has pockets of clay loam and mottles in shades of brown

##### **Sedgefield**

*Surface layer:*

0 to 8 inches—brown sandy loam

*Subsoil:*

8 to 17 inches—yellowish brown clay that has mottles in shades of red and brown

17 to 25 inches—brownish yellow clay that has mottles in shades of gray, brown, and red

25 to 34 inches—brownish yellow clay loam that has mottles in shades of gray, brown, and white

*Underlying material:*

34 to 44 inches—mottled light gray, light reddish brown, strong brown, and brownish yellow sandy clay loam

44 to 54 inches—light gray sandy clay loam that has mottles in shades of brown and white

54 to 72 inches—strong brown, light gray, white, and



pale yellow sandy clay loam saprolite that has pockets of clay loam and clay

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Helena—moderately well drained;

Sedgefield—moderately well drained and somewhat poorly drained

*Permeability:* Slow

*Available water capacity:* Moderate

*Seasonal high water table:* Helena—1.5 to 2.5 feet below the surface during the period January through April; Sedgefield—1.0 to 1.5 feet below the surface during the period January through April

*Flooding:* None

*Shrink-swell potential:* High

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium or rapid

*Bedrock type, depth:* Mixed felsic and mafic crystalline rocks, at a depth of more than 60 inches

### **Inclusions**

*Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- The well drained Appling soils on shoulder slopes and in the slightly higher areas
- Lignum soils, which have moderate shrink-swell potential; along the outer edge of the map unit
- Orange soils, which have a very firm, plastic subsoil; in the slightly higher areas

*Similar inclusions:*

- Small areas of eroded Helena or Sedgefield soils that have a surface layer of sandy clay loam or clay loam

### **Use and Management**

**Uses:** Woodland and some areas of cropland or pasture

#### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.
- A drainage system that includes ditches or perforated tile and diversions can help to lower the seasonal high water table and to remove surface water.
- Planting should be delayed in the spring to minimize the formation of clods in the soil and prevent rutting caused by equipment.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.

### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Wetness, restricted permeability, shrinking and swelling, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

### **Interpretive Groups**

*Land capability classification:* IIe

*Woodland ordination symbol:* Based on loblolly pine as the indicator species, 8A in areas of the Helena soil and 8W in areas of the Sedgefield soil

## **HrB—Herndon loam, 2 to 6 percent slopes**

### **Setting**

*Landscape position:* Smooth upland ridges

*Shape and size of areas:* Rounded or irregularly shaped; about 10 to 250 acres in size

### **Composition**

Herndon and similar soils: 85 percent

Contrasting inclusions: 15 percent

### **Typical Profile**

*Surface layer:*

0 to 7 inches—yellowish brown loam

*Subsoil:*

7 to 16 inches—strong brown clay loam

16 to 41 inches—strong brown clay that has mottles in shades of red

41 to 58 inches—yellowish red silty clay loam that has mottles in shades of red and yellow

*Underlying material:*

58 to 70 inches—pinkish white, yellow, red, and yellowish red silt loam saprolite

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium

*Bedrock type, depth:* Fine grained felsic metamorphic rock, at a depth of more than 60 inches

### **Inclusions**

*Contrasting inclusions:*

- Georgeville soils, which have a redder subsoil than that of the Herndon soil; in the smoother, slightly higher areas

- The somewhat poorly drained and moderately well drained Lignum soils in depressions and at the head of drainageways

- The somewhat poorly drained and moderately well drained Orange soils, which have a very firm, moderately plastic subsoil; in depressions

*Similar inclusions:*

- Small areas of Herndon soils that have an eroded surface layer of clay loam or clay or have a gravelly surface layer

### **Use and Management**

**Uses:** Cropland, pasture and hayland, and small areas of woodland

#### **Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.

- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Well suited

*Management concerns:* Restricted permeability, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.

- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

- Corrosion-resistant material is needed to protect concrete and uncoated steel.

### **Interpretive Groups**

*Land capability classification:* IIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **HrC—Herndon loam, 6 to 10 percent slopes**

### **Setting**

*Landscape position:* Smooth upland ridges and side slopes

*Shape and size of areas:* Elongated or irregularly shaped; about 10 to 60 acres in size

### **Composition**

Herndon and similar soils: 85 percent

Contrasting inclusions: 15 percent

### **Typical Profile**

*Surface layer:*

0 to 7 inches—yellowish brown loam

*Subsoil:*

7 to 16 inches—strong brown clay loam

16 to 41 inches—strong brown clay that has mottles in shades of red

41 to 58 inches—yellowish red silty clay loam that has mottles in shades of red and yellow

*Underlying material:*

58 to 70 inches—pinkish white, yellow, red, and yellowish red silt loam saprolite

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Moderate

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Fine grained felsic metamorphic rock, at a depth of more than 60 inches

### **Inclusions**

*Contrasting inclusions:*

- Georgeville soils, which have a redder subsoil than that of the Herndon soil; in the smoother, slightly higher areas
- The shallow Goldston soils in the more sloping areas
- Tatum soils, which have a subsoil that is redder than that of the Herndon soil; in the more sloping areas

*Similar inclusions:*

- Small areas of Herndon soils that have an eroded surface layer of clay loam or clay or have a gravelly surface layer

### **Use and Management**

**Uses:** Cropland, pasture and hayland, and woodland

#### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

### **Urban development**

*Suitability:* Well suited

*Management concerns:* Restricted permeability, slope, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area and installing distribution lines on the contour improves the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect concrete and uncoated steel.

### **Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **LgB—Lignum loam, 2 to 6 percent slopes**

### **Setting**

*Landscape position:* Smooth upland ridges, toe slopes, and low areas at the head of drainageways

*Shape and size of areas:* Oblong and irregular in width; generally about 10 to 80 acres in size but as much as several hundred acres

### **Composition**

Lignum and similar soils: 80 percent

Contrasting inclusions: 20 percent

### **Typical Profile**

*Surface layer:*

0 to 6 inches—light yellowish brown loam

*Subsoil:*

6 to 8 inches—brownish yellow silty clay loam that has mottles in shades of red

8 to 14 inches—yellowish brown clay that has mottles in shades of gray, brown, and red

14 to 28 inches—yellowish brown clay that has mottles in shades of gray, brown, and red

28 to 35 inches—light gray clay that has mottles in shades of brown, yellow, and red

*Underlying material:*

35 to 56 inches—mottled yellowish brown, light gray, pale olive, and strong brown silt loam saprolite

*Bedrock:*

56 to 62 inches—soft, dark colored schist

### **Soil Properties and Qualities**

*Depth:* Deep

*Drainage class:* Moderately well drained and somewhat poorly drained

*Permeability:* Very slow

*Available water capacity:* Moderate

*Seasonal high water table:* 1.0 to 2.5 feet below the surface during the period December through May

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium or rapid

*Bedrock type, depth:* Fine grained, soft metamorphic rock, at a depth of 40 to 60 inches

### **Inclusions**

*Contrasting inclusions:*

- The well drained Georgeville soils, which have a subsoil that is thicker and redder than that of the Lignum soil; on dissected knolls and the upper parts of ridges
- The well drained Herndon soils on shoulder slopes and in the slightly higher areas
- Orange soils, which have a very firm, plastic subsoil; on toe slopes at the head of drainageways
- Small areas of Lignum soils that have a stony surface layer

*Similar inclusions:*

- Small areas of eroded Lignum soils that have a gravelly surface layer

### **Use and Management**

**Uses:** Woodland and some areas of cropland and pasture

### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.
- A drainage system that includes ditches or perforated tile and diversions can help to lower the seasonal high water table and to remove surface water.
- Planting should be delayed in the spring to minimize the formation of clods in the soil and prevent rutting caused by equipment.

### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Wetness

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.

### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Wetness, restricted permeability, and low strength

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

### **Interpretive Groups**

*Land capability classification:* IIe

*Woodland ordination symbol:* 7W, based on loblolly pine as the indicator species

## **MeB—Mecklenburg loam, 2 to 6 percent slopes**

### ***Setting***

*Landscape position:* Smooth upland ridges and knolls

*Shape and size of areas:* Rounded or irregularly shaped; about 10 to 80 acres in size

### ***Composition***

Mecklenburg and similar soils: 90 percent

Contrasting inclusions: 10 percent

### ***Typical Profile***

*Surface layer:*

0 to 6 inches—brown loam

*Subsoil:*

6 to 15 inches—yellowish red clay

15 to 30 inches—yellowish red clay that has mottles in shades of red

30 to 38 inches—yellowish red clay that has mottles in shades of brown, red, and white

*Underlying material:*

38 to 62 inches—strong brown, brownish yellow, yellowish red, red, and white loam saprolite

*Bedrock:*

62 to 68 inches—soft schist

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium

*Bedrock type, depth:* Mafic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Enon soils, which have a subsoil that is browner than that of the Mecklenburg soil; on the outer edge of the map unit

- Cecil soils, which have a subsoil that is thicker than that of the Mecklenburg soil; in the lower part of the map unit on the outer edge

*Similar inclusions:*

- Small areas of Mecklenburg soils that have an eroded surface layer of clay loam or clay

### ***Use and Management***

**Uses:** Cropland, pasture and hayland, and some small areas of woodland

#### **Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and a high content of clay

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Restricted permeability, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

### ***Interpretive Groups***

*Land capability classification:* IIe

*Woodland ordination symbol:* 7A, based on shortleaf pine as the indicator species

## **MeC—Mecklenburg loam, 6 to 10 percent slopes**

### ***Setting***

*Landscape position:* Smooth upland ridges and upper side slopes

*Shape and size of areas:* Elongated or rounded; about 10 to 50 acres in size

### ***Composition***

Mecklenburg and similar soils: 90 percent

Contrasting inclusions: 10 percent

### ***Typical Profile***

*Surface layer:*

0 to 6 inches—brown loam

*Subsoil:*

6 to 15 inches—yellowish red clay

15 to 30 inches—yellowish red clay that has mottles in shades of red

30 to 38 inches—yellowish red clay that has mottles in shades of brown, red, and white

*Underlying material:*

38 to 62 inches—strong brown, brownish yellow, yellowish red, red, and white loam saprolite

*Bedrock:*

62 to 68 inches—soft schist

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Mafic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Enon soils, which have a subsoil that is browner than that of the Mecklenburg soil; on the outer edge of the map unit

- Cecil soils, which have a subsoil that is thicker than that of the Mecklenburg soil; in the lower part of the map unit on the outer edge

*Similar inclusions:*

- Small areas of Mecklenburg soils that have an eroded surface layer of clay loam or clay

## ***Use and Management***

**Uses:** Cropland, pasture and hayland, and woodland

### ***Cropland***

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and a high content of clay

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

### ***Pasture and hayland***

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

### ***Woodland***

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

### ***Urban development***

*Suitability:* Poorly suited

*Management concerns:* Restricted permeability, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

## ***Interpretive Groups***

*Land capability classification:* IIIe

*Woodland ordination symbol:* 7A, based on shortleaf pine as the indicator species

## **OnA—Orange loam, 0 to 2 percent slopes**

### ***Setting***

*Landscape position:* Smooth, broad uplands and depressions or low areas around drainageways  
*Shape and size of areas:* Oblong and irregular in width; generally about 10 to 60 acres in size but as much as 500 acres

### ***Composition***

Orange and similar soils: 80 percent  
 Contrasting inclusions: 20 percent

### ***Typical Profile***

*Surface layer:*  
 0 to 6 inches—dark yellowish brown loam  
*Subsurface layer:*  
 6 to 9 inches—light yellowish brown loam  
*Subsoil:*  
 9 to 13 inches—yellowish brown clay that has mottles in shades of red and brown  
 13 to 29 inches—yellowish brown clay that has mottles in shades of gray and red  
*Underlying material:*  
 29 to 42 inches—mottled yellowish brown, light gray, strong brown, and red silt loam  
*Bedrock:*  
 42 to 61 inches—soft, multicolored diorite and gabbro  
 61 inches—hard diorite-gabbro

### ***Soil Properties and Qualities***

*Depth:* Deep  
*Drainage class:* Moderately well drained and somewhat poorly drained  
*Permeability:* Slow  
*Available water capacity:* Low  
*Seasonal high water table:* 1 to 3 feet below the surface during the period December through May  
*Flooding:* None  
*Shrink-swell potential:* High  
*Erosion hazard:* Slight  
*Slope class:* Nearly level  
*Surface runoff:* Slow  
*Bedrock type, depth:* Soft, mafic crystalline rock, at a depth of 40 to 60 inches; hard bedrock, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- The well drained Enon soils on shoulder slopes and in the slightly higher areas
- The moderately well drained Helena soils in the slightly higher areas
- Lignum soils, which have more silt in the subsoil than that of the Orange soil; in the slightly higher areas

- Sedgefield soils, which have a surface layer of sandy loam; in scattered areas
- Small areas of Orange soils that have a stony surface layer

### ***Similar inclusions:***

- Small areas of Orange soils that have a gravelly surface layer

### ***Use and Management***

**Uses:** Woodland and some areas of cropland and pasture

#### **Cropland**

*Suitability:* Moderately suited  
*Management concerns:* Erosion hazard and wetness  
*Management measures:*

- A drainage system that includes ditches or perforated tile and diversions can help to lower the seasonal high water table and to remove surface water.
- Planting should be delayed in the spring to minimize the formation of clods in the soil and prevent rutting caused by equipment.

#### **Pasture and hayland**

*Suitability:* Well suited  
*Management concerns:* Erosion hazard and wetness  
*Management measures:*

- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited  
*Productivity:* Moderately high  
*Management concerns:* Wetness  
*Management measures:*

- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Poorly suited  
*Management concerns:* Wetness, restricted permeability, shrinking and swelling, low strength, and corrosivity  
*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields.

Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.

- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

### ***Interpretive Groups***

*Land capability classification:* IIIw

*Woodland ordination symbol:* 7W, based on loblolly pine as the indicator species

## **OrB—Orange gravelly loam, 2 to 7 percent slopes**

### ***Setting***

*Landscape position:* Smooth upland ridges and knolls

*Shape and size of areas:* Rounded or irregularly shaped; about 10 to 100 acres in size

### ***Composition***

Orange and similar soils: 85 percent

Contrasting inclusions: 15 percent

### ***Typical Profile***

*Surface layer:*

0 to 6 inches—dark yellowish brown gravelly loam

*Subsurface layer:*

6 to 9 inches—light yellowish brown gravelly loam

*Subsoil:*

9 to 13 inches—yellowish brown clay that has mottles in shades of red and brown

13 to 29 inches—yellowish brown clay that has mottles in shades of gray and red

*Underlying material:*

29 to 42 inches—mottled yellowish brown, light gray, strong brown, and red silt loam

*Bedrock:*

42 to 61 inches—soft, multicolored diorite and gabbro

61 inches—hard diorite-gabbro

### ***Soil Properties and Qualities***

*Depth:* Deep

*Drainage class:* Moderately well drained and somewhat poorly drained

*Permeability:* Slow

*Available water capacity:* Low

*Seasonal high water table:* 1 to 3 feet below the surface during the period December through May

*Flooding:* None

*Shrink-swell potential:* High

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium

*Bedrock type, depth:* Soft, mafic crystalline rock, at a depth of 40 to 60 inches; hard bedrock, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- The well drained Enon soils on shoulder slopes and in the slightly higher areas
- Lignum soils, which have more silt in the subsoil than that of the Orange soil; in the slightly lower areas
- The shallow Goldston soils on shoulder slopes

*Similar inclusions:*

- Small areas of Orange soils that have a surface layer of loam or clay loam

### ***Use and Management***

**Uses:** Woodland and some areas of cropland and pasture

#### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.
- A drainage system that includes ditches or perforated tile and diversions can help to lower the seasonal high water table and to remove surface water.
- Planting should be delayed in the spring to minimize the formation of clods in the soil and prevent rutting caused by equipment.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and wetness

*Management measures:*

- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Wetness



**Management measures:**

- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

**Urban development**

*Suitability:* Poorly suited

*Management concerns:* Wetness, restricted permeability, shrinking and swelling, low strength, and corrosivity

**Management measures:**

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.

**Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 7W, based on loblolly pine as the indicator species

**PaB2—Pacolet clay loam, 2 to 6 percent slopes, eroded**

**Setting**

*Landscape position:* Smooth upland ridges and knolls

*Shape and size of areas:* Elongated or rounded; about 10 to 80 acres in size

**Composition**

Pacolet and similar soils: 90 percent

Contrasting inclusions: 10 percent

**Typical Profile**

*Surface layer:*

0 to 4 inches—yellowish red clay loam

*Subsoil:*

4 to 25 inches—red clay

*Underlying material:*

25 to 45 inches—red loam saprolite

45 to 60 inches—red, strong brown, brownish yellow, and white loam saprolite

**Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Severe

*Slope class:* Gently sloping

*Surface runoff:* Moderate or rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

**Inclusions**

*Contrasting inclusions:*

- Wedowee soils, which have a subsoil that is browner than that of the Pacolet soil; on shoulder slopes
- Cecil soils, which have a subsoil that is thicker than that of the Pacolet soil; in smooth, less sloping areas

*Similar inclusions:*

- Small areas of Pacolet soils that have a surface layer of loam or sandy loam

**Use and Management**

**Uses:** Cropland, pasture and hayland, and small areas of woodland

**Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.
- Tilling the soil when it is dry minimizes clodding and crusting and increases the germination of seeds.

**Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Equipment limitation and seedling mortality

*Management measures:*

- Limiting the use of equipment during wet periods

helps to prevent rutting and compaction causing possible root damage.

- Keeping a layer of litter on the surface increases the rate of water infiltration and reduces the seedling mortality rate.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

### **Urban development**

*Suitability:* Well suited

*Management concerns:* Corrosivity, restricted permeability, and low strength

*Management measures:*

- Corrosion-resistant material is needed to protect uncoated steel and concrete.
- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

### **Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 6C, based on loblolly pine as the indicator species

## **PaC2—Pacolet clay loam, 6 to 10 percent slopes, eroded**

### **Setting**

*Landscape position:* Upland ridges and side slopes

*Shape and size of areas:* Elongated or rounded; about 10 to 50 acres in size

### **Composition**

Pacolet and similar soils: 90 percent

Contrasting inclusions: 10 percent

### **Typical Profile**

*Surface layer:*

0 to 4 inches—yellowish red clay loam

*Subsoil:*

4 to 25 inches—red clay

*Underlying material:*

25 to 45 inches—red loam saprolite

45 to 60 inches—red, strong brown, brownish yellow, and white loam saprolite

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Very severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### **Inclusions**

*Contrasting inclusions:*

- Wedowee soils, which have a subsoil that is browner than that of the Pacolet soil; on shoulder slopes
- Cecil soils, which have a subsoil that is thicker than that of the Pacolet soil; in smooth, less sloping areas

*Similar inclusions:*

- Small areas of Pacolet soils that have a surface layer of loam or sandy loam

### **Use and Management**

*Uses:* Cropland, pasture and hayland, and small areas of woodland

#### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.
- Tilling the soil when it is dry minimizes clodding and crusting and increases the germination of seeds.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Equipment limitation and seedling mortality

*Management measures:*

- Limiting the use of equipment during wet periods helps to prevent rutting and soil compaction causing possible root damage.
- Keeping a layer of litter on the surface increases the rate of water infiltration and reduces the seedling mortality rate.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

**Urban development**

*Suitability:* Well suited

*Management concerns:* Corrosivity, restricted permeability, slope, and low strength

*Management measures:*

- Corrosion-resistant material is needed to protect uncoated steel and concrete.
- Increasing the size of the absorption area and placing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.

**Interpretive Groups**

*Land capability classification:* IVe

*Woodland ordination symbol:* 6C, based on loblolly pine as the indicator species

**RoF—Rion sandy loam, 25 to 40 percent slopes**

**Setting**

*Landscape position:* Upland side slopes

*Shape and size of areas:* Long and narrow; about 10 to 50 acres in size

**Composition**

Rion and similar soils: 80 percent

Contrasting inclusions: 20 percent

**Typical Profile**

*Surface layer:*

0 to 3 inches—dark grayish brown sandy loam

*Subsurface layer:*

3 to 6 inches—light yellowish brown sandy loam

*Subsoil:*

6 to 27 inches—brownish yellow loam

27 to 34 inches—brownish yellow sandy loam that has mottles in shades of brown

*Underlying layer:*

34 to 61 inches—brownish yellow, strong brown, and yellowish brown sandy loam saprolite

*Bedrock:*

61 to 65 inches—soft, felsic crystalline rock

**Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Very severe

*Slope class:* Steep

*Surface runoff:* Very rapid

*Bedrock type, depth:* Soft, weathered felsic crystalline rock, at a depth of more than 60 inches

**Inclusions**

*Contrasting inclusions:*

- Wedowee soils, which have a clayey subsoil; on shoulder slopes
- The shallow Wilkes soils in scattered areas
- Small areas of Rion soils that have a stony surface layer

*Similar inclusions:*

- Small areas of Rion soils that have a gravelly or eroded surface layer

**Use and Management**

**Uses:** Woodland and small areas of pasture

**Cropland**

*Suitability:* Unsited

*Management concerns:* Slope and erosion hazard

*Management measures:*

- A better suited soil should be selected.

**Pasture and hayland**

*Suitability:* Poorly suited

*Management concerns:* Slope and erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland**

*Suitability:* Moderately suited

*Productivity:* Moderately high

*Management concerns:* Equipment limitation and erosion hazard

*Management measures:*

- Keeping a layer of litter on the surface increases the available water capacity.
- Revegetating disturbed areas and installing water-control structures, such as culverts, broad-based dips, and water bars, help to control erosion.

#### **Urban development**

*Suitability:* Unsited

*Management concerns:* Slope

*Management measures:*

- A better suited soil should be selected.

#### **Interpretive Groups**

*Land capability classification:* VIIe

*Woodland ordination symbol:* 8R, based on loblolly pine as the indicator species

### **TaD—Tatum loam, 10 to 15 percent slopes**

#### **Setting**

*Landscape position:* Upland side slopes adjacent to natural drainageways

*Shape and size of areas:* Elongated or irregularly shaped; about 10 to 50 acres in size

#### **Composition**

Tatum and similar soils: 80 percent

Contrasting inclusions: 20 percent

#### **Typical Profile**

*Surface layer:*

0 to 2 inches—brown loam

2 to 6 inches—dark grayish brown loam

*Subsoil:*

6 to 9 inches—red clay loam

9 to 22 inches—red clay

22 to 41 inches—red clay loam that has mottles in shades of yellow

*Bedrock:*

41 to 61 inches—multicolored, soft slate and gneiss

#### **Soil Properties and Qualities**

*Depth:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Severe

*Slope class:* Strongly sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Soft, fine grained metamorphic rock, at a depth of more than 40 inches

#### **Inclusions**

*Contrasting inclusions:*

- Georgeville soils, which have a subsoil that is thicker than that of the Tatum soil; in the smoother, slightly higher areas
- The shallow Goldston soils in the more sloping areas
- Herndon soils, which have a subsoil that is browner than that of the Tatum soil; on shoulder slopes

*Similar inclusions:*

- Small areas of Tatum soils that have a gravelly surface layer

#### **Use and Management**

**Uses:** Woodland and small areas of pasture and cropland

#### **Cropland**

*Suitability:* Poorly suited

*Management concerns:* Erosion hazard and surface runoff

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Low strength, corrosivity, slope, depth to bedrock, and restricted permeability

**Management measures:**

- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect concrete and uncoated steel.
- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.

**Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

**TaE—Tatum loam, 15 to 35 percent slopes**

**Setting**

*Landscape position:* Dissected upland side slopes

*Shape and size of areas:* Elongated or irregularly shaped; about 10 to 50 acres in size

**Composition**

Tatum and similar soils: 85 percent

Contrasting inclusions: 15 percent

**Typical Profile**

*Surface layer:*

0 to 2 inches—brown loam

2 to 6 inches—dark grayish brown loam

*Subsoil:*

6 to 9 inches—red clay loam

9 to 22 inches—red clay

22 to 41 inches—red clay loam that has mottles in shades of yellow

*Bedrock:*

41 to 61 inches—multicolored, soft slate and gneiss

**Soil Properties and Qualities**

*Depth:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Very severe

*Slope class:* Moderately steep and steep

*Surface runoff:* Very rapid

*Bedrock type, depth:* Soft, fine grained metamorphic rock, at a depth of more than 40 inches

**Inclusions**

*Contrasting inclusions:*

- The shallow Goldston soils in the more sloping areas

*Similar inclusions:*

- Small areas of Tatum soils that have a gravelly surface layer

**Use and Management**

**Uses:** Woodland and small areas of pasture and cropland

**Cropland**

*Suitability:* Unsited

*Management concerns:* Slope and erosion hazard

*Management measures:*

- A better suited soil should be selected.

**Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Slope and erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland**

*Suitability:* Moderately suited

*Productivity:* Moderately high

*Management concerns:* Equipment limitation and erosion hazard

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Revegetating disturbed areas and installing water-control structures, such as culverts, broad-based dips, and water bars, help to control erosion.

**Urban development**

*Suitability:* Poorly suited

*Management concerns:* Slope, low strength, and corrosivity

*Management measures:*

- Structures should be constructed on the contour along the natural slope or in the less sloping areas.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect concrete and uncoated steel.

- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.

### ***Interpretive Groups***

*Land capability classification:* VIe

*Woodland ordination symbol:* 8R, based on loblolly pine as the indicator species

## **UdB—Udorthents, loamy, gently sloping**

### ***Setting***

*Landscape position:* Upland ridges and side slopes, commonly near urban areas (cut and fill areas, borrow areas where soil material has been removed and placed on an adjacent site, and, to a lesser extent, landfills, borrow pits, and recreational areas, such as baseball fields)

*Shape and size of areas:* Irregularly shaped; about 5 to 100 acres in size

### ***Composition***

Udorthents: 85 percent

Contrasting inclusions: 15 percent natural soils

### ***Soil Properties and Qualities***

*Depth:* 0 inches in areas where all of the natural soil has been excavated; in fill areas, 30 to 60 inches of soil material over the natural soil or bedrock

*Drainage class:* Well drained and moderately well drained

*Permeability:* Moderate to slow

*Available water capacity:* Low to high

*Seasonal high water table:* Variable

*Flooding:* Commonly none

*Shrink-swell potential:* Low to high

*Erosion:* Moderate to very severe

*Slope class:* Dominantly gently sloping; very steep to nearly vertical sides of borrow pits

*Stoniness:* Stone-sized rock fragments on the surface in some areas

*Surface runoff:* Medium to very rapid

*Bedrock type, depth:* Felsic or mafic metamorphic or crystalline rocks, exposed at the surface to a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Areas of ponded water

### ***Use and Management***

**Uses:** Urban development, recreational areas, and idle land

*Management concerns:* Slope, erosion hazard, restricted permeability, and differential settling

*Management measures:*

- Onsite investigation is necessary to determine specific soil limitations and to make detailed recommendations.
- Slopes should be stabilized by land grading and shaping and provided with adequate surface cover.

### ***Interpretive Groups***

*Land capability classification:* VIIIs

*Woodland ordination symbol:* None

## **Ur—Urban land**

### ***Setting***

*Shape and size of areas:* Irregularly shaped; about 50 to 100 acres in size, near the town of Roxboro

### ***Composition***

Areas of Urban land: more than 85 percent

Contrasting inclusions: 15 percent natural soils

### ***Characteristics***

- Areas of Urban land are covered by streets, parking lots, buildings, and other urban structures.
- Onsite investigation is necessary to determine specific soil properties and limitations and to make detailed recommendations.

### ***Interpretive Groups***

*Land capability classification:* VIIIs

*Woodland ordination symbol:* None

## **VaB—Vance sandy loam, 2 to 6 percent slopes**

### ***Setting***

*Landscape position:* Smooth upland ridges and knolls

*Shape and size of areas:* Rounded or irregularly shaped; about 10 to 80 acres in size

### ***Composition***

Vance and similar soils: 80 percent

Contrasting inclusions: 20 percent

### ***Typical Profile***

*Surface layer:*

0 to 5 inches—yellowish brown sandy loam

*Subsoil:*

5 to 10 inches—yellowish brown clay loam that has mottles in shades of yellow

10 to 28 inches—yellowish brown clay that has mottles in shades of yellow and red

28 to 35 inches—mixed yellowish red, yellow, yellowish brown, and white clay loam

*Underlying material:*

35 to 60 inches—yellowish red, reddish yellow, and white loam saprolite

### **Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium or rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### **Inclusions**

*Contrasting inclusions:*

- The moderately permeable Appling soils in smooth, less sloping areas
- The moderately permeable Wedowee soils in scattered areas
- The moderately well drained Helena soils in depressions and at the head of drainageways
- Enon soils, which have a subsoil that is less acid than that of the Vance soil and are underlain by mafic or mixed felsic to mafic crystalline rocks; in scattered areas

*Similar inclusions:*

- Small areas of Vance soils that have a gravelly surface layer or a surface layer of sandy clay loam or clay loam

### **Use and Management**

**Uses:** Cropland, pasture and hayland, and small areas of woodland

#### **Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.
- Tilling the soil when it is dry minimizes clodding and crusting and increases the germination of seeds.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.
- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.

### **Woodland**

*Suitability:* Well suited (fig. 9)

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.

### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Restricted permeability, low strength, and corrosivity

*Management measures:*

- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.
- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.

### **Interpretive Groups**

*Land capability classification:* IIe

*Woodland ordination symbol:* 7A, based on shortleaf pine as the indicator species

## **VaC—Vance sandy loam, 6 to 10 percent slopes**

### **Setting**

*Landscape position:* Upland side slopes and knolls

*Shape and size of areas:* Elongated or irregularly shaped; about 10 to 30 acres in size





Figure 9.—A stand of shortleaf pine in an area of Vance sandy loam, 2 to 6 percent slopes. This soil is well suited to woodland.

***Composition***

Vance and similar soils: 80 percent  
Contrasting inclusions: 20 percent

***Typical Profile***

*Surface layer:*  
0 to 5 inches—yellowish brown sandy loam



*Subsoil:*

- 5 to 10 inches—yellowish brown clay loam that has mottles in shades of yellow
- 10 to 28 inches—yellowish brown clay that has mottles in shades of yellow and red
- 28 to 35 inches—mixed yellowish red, yellow, yellowish brown, and white clay loam

*Underlying material:*

- 35 to 60 inches—yellowish red, reddish yellow, and white loam saprolite

**Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Available water capacity:* Moderate

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

**Inclusions**

*Contrasting inclusions:*

- The moderately permeable Appling soils in smooth, less sloping areas
- The moderately permeable Wedowee soils in scattered areas
- The moderately well drained Helena soils in depressions and at the head of drainageways
- Enon soils, which have a subsoil that is less acid than that of the Vance soil and are underlain by mafic or mixed felsic to mafic crystalline rocks; in scattered areas

*Similar inclusions:*

- Small areas of Vance soils that have a gravelly surface layer or a surface layer of sandy clay loam or clay loam

**Use and Management**

**Uses:** Pasture and hayland, and small areas of cropland and woodland

**Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour

farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

- Tilling the soil when it is dry minimizes clodding and crusting and increases the germination of seeds.

**Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.
- Overgrazing or grazing when the soil is too wet should be avoided because it can result in compaction, decreased productivity, and a rough surface.

**Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Limiting the use of equipment during wet periods helps to prevent rutting and possible root damage.

**Urban development**

*Suitability:* Moderately suited

*Management concerns:* Restricted permeability, low strength, corrosivity, and slope

*Management measures:*

- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.
- Corrosion-resistant material is needed to protect uncoated steel and concrete.
- Backfilling with coarse textured material strengthens the foundations of buildings and helps to prevent or reduce damage from shrinking and swelling.

**Interpretive Groups**

*Land capability classification:* IIIe

*Woodland ordination symbol:* 7A, based on shortleaf pine as the indicator species

## **WeB—Wedowee sandy loam, 2 to 6 percent slopes**

### ***Setting***

*Landscape position:* Smooth upland ridges and knolls

*Shape and size of areas:* Narrow and elongated or irregularly shaped; about 10 to 50 acres in size

### ***Composition***

Wedowee and similar soils: 85 percent

Contrasting inclusions: 15 percent

### ***Typical Profile***

*Surface layer:*

0 to 5 inches—yellowish brown sandy loam

*Subsoil:*

5 to 7 inches—yellowish brown sandy clay loam

7 to 17 inches—yellowish red clay that has mottles in shades of brown, yellow, and red

17 to 25 inches—yellowish red sandy clay loam that has mottles in shades of brown and yellow

*Underlying material:*

25 to 55 inches—yellowish red, strong brown, yellow, and white sandy loam saprolite that has pockets of sandy clay loam

55 to 65 inches—pink and reddish yellow sandy loam saprolite

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium or rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Appling soils, which have a subsoil that is thicker than that of the Wedowee soil; in the smoother, less sloping areas
- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- The moderately well drained Helena soils in depressions and at the head of drainageways
- Pacolet soils, which have a subsoil that is redder than that of the Wedowee soil; in the slightly higher areas

*Similar inclusions:*

- Small areas of Wedowee soils that have a gravelly surface layer or a surface layer of sandy clay loam or clay loam

### ***Use and Management***

**Uses:** Cropland, pasture and hayland, and urban development

#### **Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Well suited

*Management concerns:* Corrosivity, restricted permeability, and low strength

*Management measures:*

- Corrosion-resistant material is needed to protect concrete.
- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

### ***Interpretive Groups***

*Land capability classification:* IIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **WeC—Wedowee sandy loam, 6 to 10 percent slopes**

### ***Setting***

*Landscape position:* Upland side slopes and ridges

*Shape and size of areas:* Narrow and elongated or irregularly shaped; about 10 to 30 acres in size

### ***Composition***

Wedowee and similar soils: 80 percent

Contrasting inclusions: 20 percent

### ***Typical Profile***

*Surface layer:*

0 to 5 inches—yellowish brown sandy loam

*Subsoil:*

5 to 7 inches—yellowish brown sandy clay loam

7 to 17 inches—yellowish red clay that has mottles in shades of brown, yellow, and red

17 to 25 inches—yellowish red sandy clay loam that has mottles in shades of brown and yellow

*Underlying material:*

25 to 55 inches—yellowish red, strong brown, yellow, and white sandy loam saprolite that has pockets of sandy clay loam

55 to 65 inches—pink and reddish yellow sandy loam saprolite

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Severe

*Slope class:* Moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Appling soils, which have a subsoil that is thicker than that of the Wedowee soil; in the smoother, less sloping areas
- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges

- The moderately well drained Helena soils in depressions and at the head of drainageways
- Pacolet soils, which have a subsoil that is redder than that of the Wedowee soil; in the slightly higher areas

*Similar inclusions:*

- Small areas of Wedowee soils that have a gravelly surface layer or a surface layer of sandy clay loam or clay loam

### ***Use and Management***

**Uses:** Cropland, pasture and hayland, and urban development

#### **Cropland**

*Suitability:* Moderately suited

*Management concerns:* Erosion hazard, surface runoff, and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Corrosivity, restricted permeability, slope, and low strength

*Management measures:*

- Corrosion-resistant material is needed to protect concrete.
- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.

- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.

### ***Interpretive Groups***

*Land capability classification:* IIIe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

## **WeD—Wedowee sandy loam, 10 to 15 percent slopes**

### ***Setting***

*Landscape position:* Upland side slopes

*Shape and size of areas:* Narrow and elongated or irregularly shaped; about 10 to 70 acres in size

### ***Composition***

Wedowee and similar soils: 80 percent

Contrasting inclusions: 20 percent

### ***Typical Profile***

*Surface layer:*

0 to 5 inches—yellowish brown sandy loam

*Subsoil:*

5 to 7 inches—yellowish brown sandy clay loam

7 to 17 inches—yellowish red clay that has mottles in shades of brown, yellow, and red

17 to 25 inches—yellowish red sandy clay loam that has mottles in shades of brown and yellow

*Underlying material:*

25 to 55 inches—yellowish red, strong brown, yellow, and white sandy loam saprolite that has pockets of sandy clay loam

55 to 65 inches—pink, white, and reddish yellow sandy loam saprolite

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Severe

*Slope class:* Strongly sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Vance soils, which have a very firm, plastic subsoil; on dissected knolls and the upper parts of ridges
- Pacolet soils, which have a subsoil that is redder than that of the Wedowee soil; in the slightly higher areas
- Rion soils, which have a loamy subsoil; on the steeper side slopes
- The shallow Wilkes soils, which are underlain by mafic crystalline rocks; in scattered areas

*Similar inclusions:*

- Small areas of Wedowee soils that have a gravelly surface layer or a surface layer of sandy clay loam or clay loam

### ***Use and Management***

**Uses:** Woodland, smaller areas of pasture and hayland, and a few areas of cropland

#### **Cropland**

*Suitability:* Poorly suited

*Management concerns:* Erosion hazard, surface runoff, and clayey subsoil

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Corrosivity, restricted permeability, slope, and low strength

**Management measures:**

- Corrosion-resistant material is needed to protect concrete.
- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.

**Interpretive Groups**

*Land capability classification:* IVe

*Woodland ordination symbol:* 8A, based on loblolly pine as the indicator species

**WeE—Wedowee sandy loam, 15 to 25 percent slopes****Setting**

*Landscape position:* Upland side slopes dissected by intermittent drainageways

*Shape and size of areas:* Narrow and elongated or irregularly shaped; about 10 to 80 acres in size

**Composition**

Wedowee and similar soils: 80 percent

Contrasting inclusions: 20 percent

**Typical Profile**

*Surface layer:*

0 to 5 inches—yellowish brown sandy loam

*Subsoil:*

5 to 7 inches—yellowish brown sandy clay loam

7 to 17 inches—yellowish red clay that has mottles in shades of brown, yellow, and red

17 to 25 inches—yellowish red sandy clay loam that has mottles in shades of brown and yellow

*Underlying material:*

25 to 55 inches—yellowish red, strong brown, yellow, and white sandy loam saprolite that has pockets of sandy clay loam

55 to 65 inches—pink and reddish yellow sandy loam saprolite

**Soil Properties and Qualities**

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Very severe

*Slope class:* Moderately steep

*Surface runoff:* Very rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

**Inclusions**

*Contrasting inclusions:*

- Pacolet soils, which have a subsoil that is redder than that of the Wedowee soil; in the slightly higher areas
- Rion soils, which have a loamy subsoil; on the steeper side slopes
- The shallow Wilkes soils, which are underlain by mafic crystalline rocks; in scattered areas

*Similar inclusions:*

- Small areas of Wedowee soils that have a gravelly surface layer or a surface layer of sandy clay loam or clay loam

**Use and Management**

**Uses:** Woodland and smaller areas of pasture and hayland

**Cropland**

*Suitability:* Unsited

*Management concerns:* Erosion hazard, surface runoff, and clayey subsoil

*Management measures:*

- A better suited soil should be selected.

**Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Slope and erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

**Woodland**

*Suitability:* Moderately suited

*Productivity:* Moderately high

*Management concerns:* Equipment limitation and erosion hazard

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.
- Revegetating disturbed areas and installing water-

control structures, such as culverts, broad-based dips, and water bars, help to control erosion.

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Slope, corrosivity, restricted permeability, and low strength

*Management measures:*

- Structures should be constructed on the contour along the natural slope or in the less sloping areas.
- Corrosion-resistant material is needed to protect concrete.
- The roads should be designed so that they conform to the natural slope of the land. Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.
- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.

#### **Interpretive Groups**

*Land capability classification:* VIe

*Woodland ordination symbol:* 8R, based on loblolly pine as the indicator species

### **WfC—Wedowee sandy loam, 2 to 10 percent slopes, extremely bouldery**

#### **Setting**

*Landscape position:* Upland side slopes and ridges

*Shape and size of areas:* Elongated or irregularly shaped; generally about 10 to 60 acres in size but as much as 150 acres

#### **Composition**

Wedowee and similar soils: 80 percent

Contrasting inclusions: 20 percent

#### **Typical Profile**

*Surface layer:*

0 to 5 inches—yellowish brown sandy loam

*Subsoil:*

5 to 7 inches—yellowish brown sandy clay loam

7 to 17 inches—yellowish red clay that has mottles in shades of brown, yellow, and red

17 to 25 inches—mottled yellowish red, strong brown, and yellow sandy clay loam

*Underlying material:*

25 to 55 inches—mottled yellowish red, strong brown, yellow, and white sandy loam saprolite that has pockets of sandy clay loam

55 to 65 inches—mottled pink and reddish yellow sandy loam saprolite

#### **Soil Properties and Qualities**

*Stoniness:* Extremely bouldery; about 3 to 15 percent of the surface covered with stones and boulders that average about 20 to 100 feet apart and 4 to 10 feet in diameter

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Low

*Erosion hazard:* Severe

*Slope class:* Gently sloping and moderately sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

#### **Inclusions**

*Contrasting inclusions:*

- Appling soils, which have a subsoil that is thicker than that of the Wedowee soil; in the smoother, less sloping areas
- Pacolet soils, which have a subsoil that is redder than that of the Wedowee soil; in the slightly higher areas
- Rion soils, which have a loamy subsoil; on the steeper side slopes

*Similar inclusions:*

- Small areas of Wedowee soils that have less than 3 percent boulders

#### **Use and Management**

**Uses:** Woodland and small areas of pasture

#### **Cropland**

*Suitability:* Unsited

*Management concerns:* Large stones

*Management measures:*

- A better suited soil should be selected.

#### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Large stones and erosion hazard

*Management measures:*

- The large number of boulders makes this soil difficult to manage as pasture and hayland.
- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.



Figure 10.—Granitic boulders in a wooded area of Wedowee sandy loam, 2 to 10 percent slopes, extremely bouldery.

- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Moderately suited

*Productivity:* Moderately high

*Management concerns:* Large stones

*Management measures:*

- The large number of boulders makes this soil difficult to manage as woodland (fig. 10).
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Corrosivity, restricted permeability, slope, large stones, and low strength

*Management measures:*

- Corrosion-resistant material is needed to protect concrete.
- Increasing the size of the absorption area and installing distribution lines on the contour improve the performance of septic tank absorption fields.
- Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.
- Structures should be built in areas that have the fewest stones on the surface.



- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.

### ***Interpretive Groups***

*Land capability classification:* VI<sub>s</sub>

*Woodland ordination symbol:* 8X, based on loblolly pine as the indicator species

## **WhB—Wickham sandy loam, 2 to 6 percent slopes, rarely flooded**

### ***Setting***

*Landscape position:* Stream terraces

*Shape and size of areas:* Rounded or irregularly shaped; about 5 to 30 acres in size

### ***Composition***

Wickham and similar soils: 90 percent

Contrasting inclusions: 10 percent

### ***Typical Profile***

*Surface layer:*

0 to 8 inches—dark yellowish brown sandy loam

*Subsoil:*

8 to 12 inches—strong brown sandy clay loam

12 to 48 inches—yellowish red sandy clay loam that has mottles in shades of brown

48 to 60 inches—yellowish red sandy loam that has pockets of sandy clay loam and mottles in shades of red and brown

*Underlying material:*

60 to 65 inches—yellowish red loamy sand

### ***Soil Properties and Qualities***

*Depth:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* Rare

*Shrink-swell potential:* Low

*Erosion hazard:* Moderate

*Slope class:* Gently sloping

*Surface runoff:* Medium

*Bedrock type, depth:* Felsic crystalline rocks, at a depth of more than 60 inches

### ***Inclusions***

*Contrasting inclusions:*

- Clayey soils, which have a firm, plastic subsoil; in scattered areas

*Similar inclusions:*

- Small areas of Wickham soils that have a surface layer of sandy clay loam
- Soils having a subsoil that is browner than that of the Wickham soil

### ***Use and Management***

**Uses:** Cropland and pasture and hayland

#### **Cropland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Well suited

*Management concerns:* Erosion hazard

*Management measures:*

- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* High

*Management concerns:* Slight limitations

*Management measures:*

- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Moderately suited

*Management concerns:* Flooding and restricted permeability

*Management measures:*

- Structures should be built in the highest area to minimize the damage caused by the rare flooding.
- Increasing the size of the absorption area improves the performance of septic tank absorption fields. Installing the distribution lines during dry periods helps to prevent smearing and sealing of the trench walls.

### ***Interpretive Groups***

*Land capability classification:* II<sub>e</sub>

*Woodland ordination symbol:* 9A, based on loblolly pine as the indicator species



## **WkB—Wilkes loam, 2 to 8 percent slopes**

### ***Setting***

*Landscape position:* Upland ridges and side slopes

*Shape and size of areas:* Long and irregularly shaped; about 5 to 50 acres in size

### ***Composition***

Wilkes and similar soils: 80 percent

Contrasting inclusions: 20 percent

### ***Typical Profile***

*Surface layer:*

0 to 4 inches—brown loam

*Subsoil:*

4 to 10 inches—yellowish brown clay loam

10 to 15 inches—yellowish brown clay loam and mixed brownish yellow, reddish yellow, and dark greenish gray sandy loam

*Bedrock:*

15 to 41 inches—soft, multicolored bedrock that can be dug by hand tools

41 inches—hard, fractured bedrock

### ***Soil Properties and Qualities***

*Depth:* Shallow

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Very low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Moderate

*Slope class:* Gently sloping and moderately sloping

*Surface runoff:* Medium or rapid

*Bedrock type, depth:* Soft, mafic crystalline rocks, at a depth of 10 to 20 inches

### ***Inclusions***

*Contrasting inclusions:*

- The very deep Enon soils in the less sloping areas
- The very deep Wedowee soils on small knolls
- The moderately well drained, very deep Helena soils in depressions and at the head of drainageways

*Similar inclusions:*

- Small areas of Wilkes soils that have a surface layer of clay loam or clay

### ***Use and Management***

**Uses:** Pasture and hayland, woodland, and small areas of cropland

#### **Cropland**

*Suitability:* Poorly suited

*Management concerns:* Rooting depth, very low

available water capacity, and erosion hazard

*Management measures:*

- Returning crop residue helps to improve the available water capacity.
- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Very low available water capacity, rooting depth, and erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Keeping a layer of litter on the surface increases the available water capacity.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Depth to bedrock and low strength

*Management measures:*

- Septic tank absorption fields should be located in areas of inclusions that have suitable thickness, or suitable fill material is needed to increase the thickness of the absorption area.
- Providing sand and gravel and compacting roadbeds improve soil strength on sites for local roads and streets.

### ***Interpretive Groups***

*Land capability classification:* IVe

*Woodland ordination symbol:* 7D, based on loblolly pine as the indicator species

## **WkD—Wilkes loam, 8 to 15 percent slopes**

### ***Setting***

*Landscape position:* Upland ridges and side slopes

*Shape and size of areas:* Long and irregularly shaped; about 10 to 70 acres in size

### **Composition**

Wilkes and similar soils: 80 percent

Contrasting inclusions: 20 percent

### **Typical Profile**

*Surface layer:*

0 to 4 inches—brown loam

*Subsoil:*

4 to 10 inches—yellowish brown clay loam

10 to 15 inches—brown clay loam and mottled brownish yellow, yellowish brown, and greenish black sandy loam

*Bedrock:*

15 to 40 inches—soft, multicolored mafic crystalline rocks that can be dug by hand tools

40 inches—hard hornblende schist

### **Soil Properties and Qualities**

*Depth:* Shallow

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Very low

*Seasonal high water table:* More than 6 feet below the surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Severe

*Slope class:* Moderately sloping and strongly sloping

*Surface runoff:* Rapid

*Bedrock type, depth:* Soft, mafic crystalline rocks, at a depth of 10 to 20 inches

### **Inclusions**

*Contrasting inclusions:*

- The very deep Enon soils on shoulder slopes
- The very deep Wedowee and Rion soils in scattered areas
- Small areas of Wilkes soils that have a stony surface layer

*Similar inclusions:*

- Small areas of Wilkes soils that have a gravelly surface layer or a surface layer of clay loam or clay

### **Use and Management**

**Uses:** Woodland and small areas of pasture and hayland

#### **Cropland**

*Suitability:* Poorly suited

*Management concerns:* Rooting depth, very low available water capacity, and erosion hazard

*Management measures:*

- Returning crop residue helps to improve the available water capacity.
- Terraces and diversions, stripcropping, contour farming, no-till farming, and crop residue management help to reduce the hazard of erosion.

#### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Very low available water capacity, rooting depth, and erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

#### **Woodland**

*Suitability:* Well suited

*Productivity:* Moderately high

*Management concerns:* Slight limitations

*Management measures:*

- Keeping a layer of litter on the surface increases the available water capacity.
- Good site preparation practices, including chopping, burning, and applying herbicides, help to control plant competition and promote natural reforestation after the trees are harvested.

#### **Urban development**

*Suitability:* Poorly suited

*Management concerns:* Depth to bedrock and low strength

*Management measures:*

- Septic tank absorption fields should be located in areas of inclusions that have suitable thickness, or suitable fill material is needed to increase the thickness of the absorption area.
- Providing sand and gravel and compacting roadbeds improve soil strength. The roads should be designed so that they conform to the natural slope of the land.

### **Interpretive Groups**

*Land capability classification:* VIe

*Woodland ordination symbol:* 7D, based on loblolly pine as the indicator species

### **WkF—Wilkes loam, 15 to 45 percent slopes**

#### **Setting**

*Landscape position:* Dissected upland side slopes

*Shape and size of areas:* Long and irregularly shaped;  
about 20 to 100 acres in size

### **Composition**

Wilkes and similar soils: 80 percent

Contrasting inclusions: 20 percent

### **Typical Profile**

*Surface layer:*

0 to 4 inches—brown loam

*Subsoil:*

4 to 10 inches—yellowish brown clay loam

10 to 15 inches—brown clay loam and mottled brownish  
yellow, yellowish brown, and greenish black sandy  
loam

*Bedrock:*

15 to 40 inches—soft, multicolored mafic crystalline  
rocks that can be dug by hand tools

40 inches—hard hornblende schist

### **Soil Properties and Qualities**

*Depth:* Shallow

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Very low

*Seasonal high water table:* More than 6 feet below the  
surface

*Flooding:* None

*Shrink-swell potential:* Moderate

*Erosion hazard:* Very severe

*Slope class:* Moderately steep and steep

*Surface runoff:* Very rapid

*Bedrock type, depth:* Soft, mafic crystalline rocks, at a  
depth of 10 to 20 inches

### **Inclusions**

*Contrasting inclusions:*

- The very deep Wedowee and Rion soils in scattered areas
- Small areas of Wilkes soils that have a stony surface layer

*Similar inclusions:*

- Small areas of Wilkes soils that have a gravelly surface layer or a surface layer of clay loam or clay

### **Use and Management**

**Uses:** Woodland and small areas of pasture

### **Cropland**

*Suitability:* Unsited

*Management concerns:* Slope, rooting depth, very low  
available water capacity, and erosion hazard

*Management measures:*

- A better suited soil should be selected.

### **Pasture and hayland**

*Suitability:* Moderately suited

*Management concerns:* Very low available water  
capacity, rooting depth, and erosion hazard

*Management measures:*

- Seedbeds should be prepared on the contour or across the slope.
- A rotational grazing system and a well planned clipping and harvesting schedule help to keep the pasture in good condition.
- The pasture can be renovated as needed by applications of the proper amounts of lime and fertilizer and by planting suitable seed mixtures.

### **Woodland**

*Suitability:* Moderately suited

*Productivity:* Moderately high

*Management concerns:* Erosion hazard and equipment  
limitation

*Management measures:*

- Revegetating disturbed areas and installing water-control structures, such as culverts, broad-based dips, and water bars, help to control erosion.
- Skid trails and logging roads should be constructed on the contour or along natural slopes.
- Keeping a layer of litter on the surface increases the available water capacity.

### **Urban development**

*Suitability:* Unsited

*Management concerns:* Slope, depth to bedrock, and  
low strength

*Management measures:*

- A better suited soil should be selected.

### **Interpretive Groups**

*Land capability classification:* VIIe

*Woodland ordination symbol:* 7R, based on loblolly pine  
as the indicator species



# Prime Farmland

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In this section, prime farmland is defined and the soils in Person County that are considered prime farmland are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 8 percent.

The following map units are considered prime farmland in Person County. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

The soils identified as prime farmland in Person County are:

- |      |   |
|------|---|
| ApB  | Appling sandy loam, 2 to 6 percent slopes                 |
| CeB  | Cecil sandy loam, 2 to 6 percent slopes                   |
| EnB  | Enon fine sandy loam, 2 to 6 percent slopes               |
| GeB  | Georgeville loam, 2 to 6 percent slopes                   |
| GfB2 | Georgeville clay loam, 2 to 6 percent slopes, eroded      |
| HeB  | Helena sandy loam, 2 to 6 percent slopes                  |
| HfB  | Helena-Sedgefield sandy loams, 2 to 6 percent slopes      |
| HrB  | Herndon loam, 2 to 6 percent slopes                       |
| LgB  | Lignum loam, 2 to 6 percent slopes                        |
| MeB  | Mecklenburg loam, 2 to 6 percent slopes                   |
| PaB2 | Pacolet clay loam, 2 to 6 percent slopes, eroded          |
| VaB  | Vance sandy loam, 2 to 6 percent slopes                   |
| WeB  | Wedowee sandy loam, 2 to 6 percent slopes                 |
| WhB  | Wickham sandy loam, 2 to 6 percent slopes, rarely flooded |



# Use and Management of the Soils

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This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Generally, the soils in Person County that are well suited to crops are also well suited to urban uses. The data concerning specific soils in the county can be used in planning future land use patterns. The potential for farming should be considered relative to any soil limitations and the potential for nonfarm development.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

The acreage in crops and pasture in Person County has been slightly increasing. In 1982, about 60,000 acres was used as cropland and 17,000 acres was used as pasture or hayland in Person County. Corn for grain and silage was grown on 2,700 acres; tobacco on 7,990 acres; soybeans on 5,000 acres; small grain, mainly wheat and oats, on 8,400 acres; and sorghum on 2,200 acres.

Corn, tobacco, and soybeans are the principal row crops. Corn and grain sorghum for silage are the principal row crops used for cattle feed. Wheat, oats, and barley are the common close-growing crops that are harvested for grain. Wheat is grown primarily as a winter cover crop. In areas where wheat is grown for grain, soybeans is often grown late in spring or early in summer.

Vegetables, small fruits, tree fruits, and nursery plants are specialty crops grown commercially on a limited basis. Melons, strawberries, potatoes, sweet corn, tomatoes, peppers, and other vegetables and small fruits grow on small acreages throughout the county.

The local offices of the Natural Resources Conservation Service and the Cooperative Extension Service can provide the latest information and suggestions for growing specialty crops.

## Crops and Pasture

Bobby G. Brock and Jonathan R. Hansard, conservation agronomists, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units" and in the tables. Specific

information can be obtained from the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

### **Cropland Management**

Erosion is a hazard on most of the acreage used as cropland in Person County. It is also a hazard on a large percentage of pasture that has been converted to cropland. Erosion is a hazard on all of the gently sloping to moderately steep soils used as cropland. Generally, the hazard of erosion increases as the slope increases.

Erosion is costly for several reasons. Topsoil, water, herbicides, fertilizers, lime, and organic matter are lost if erosion is not adequately controlled. In addition to reducing productivity, sediment and other pollutants are washed into streams, lakes, and reservoirs. Effectively controlling erosion increases productivity and minimizes the cost of maintaining water quality.

Uncontrolled runoff is the primary cause of erosion and reduced productivity in the county. The lack of available water in the soil for crops is the factor that most often limits crop yields. The volume of the soil and soil texture have a great influence on the amount of water held by the soil. The losses of soil and water occur simultaneously. If resource management systems are properly used, these losses can be controlled. In most instances, a combination of components, such as grassed waterways, terraces, and stripcropping, are necessary to maintain a proper resource management system.

Conservation tillage is very effective in controlling erosion in any resource management system. Maintaining a year-round cover, such as the stubble left during no-till farming, also helps to conserve soil and water. No-till farming also reduces evaporation during the early part of the growing season, thereby leaving more water to be taken in by crops.

Terraces and diversions reduce erosion by intercepting excess surface runoff and safely routing this water to suitable outlets, such as grassed waterways. These systems are suited to use on most of the soils in the county, except on the shallow Wilkes and Rion soils.

Contour stripcropping tends to slow the rate of water flow and allow more water to be absorbed into the soil. Stripcropping is a good resource management system because it can be used in rotations of crops and grasses, crop residue management, cover crops, and, sometimes, no-till farming. If cover crops and crop residue are properly used, they help to temporarily control erosion and increase the rate of water infiltration by absorbing the energy of rain. Terraces and diversions and contour stripcropping are the most

effective practices to use on Appling, Herndon, Georgeville, Helena, and Orange soils, which have more uniform, gentle slopes. They can also be adapted to soils that have a wide range of slope.

The various components of resource management systems develop good tilth and increase the content of organic matter. Tilth is important in the germination of seeds, root growth, and water infiltration. Soils that have good tilth have a granular, porous surface layer. Organic matter promotes the development of a stable soil structure. Such components as conservation tillage and grass-based rotations increase the content of organic matter.

Most of the soils in the county have a surface layer of sandy loam or loam that is low in content of organic matter. Soils that have a finer textured surface layer, such as Georgeville, Lignum, and Herndon soils, tend to crust after intense rainfall. Soils that have an eroded surface layer also tend to crust. Adding crop residue, manure, and mulch, along with conservation tillage or grass-based rotations, protects the surface of the soil from the impact of raindrops, thus reducing the formation of crust and improving soil structure and tilth.

Fall plowing is not recommended because it exposes the surface layer to compaction by raindrops, leading to increased runoff and erosion in winter. After fall plowing, many of the soils are nearly as hard and dense at planting time as they were before they were plowed. Nearly all of the soils in the county have this problem, and nearly all are subject to a severe hazard of erosion and loss of water after fall plowing.

### **Pasture Management**

Most of the soils in Person County are suited to pasture. Pasture can be established on soils that are too eroded for row crops. Tall fescue and clover are the main pasture plants. Alfalfa and tall fescue are the main plants used for hay. Sudex and other forage sorghums can be used in the summer as hay or pasture plants.

Soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, the hazard of flooding, and slope. Management practices include testing the soil for lime and fertilizer needs, rotational grazing, and clipping pastures. Pasture and hayland that are well managed provide high yields, help to conserve the soil, and reduce surface runoff.

### **Chemical Weed Control**

The use of herbicides for weed control is a common practice on the cropland in Person County. It decreases the need for tillage and is an integral part of modern farming. Selected soil properties, such as content of organic matter and texture of the surface layer, affect



the rate of herbicide application. Estimates of both of these properties were determined for the soils in the county. Table 14 shows a general range of organic matter content in the surface layer of the soils. The texture of the surface layer is shown in the USDA texture column in table 13.

In some areas the organic matter content projected for the different soils is outside the range shown in the table. The content can be higher in soils that have received high amounts of animal or manmade waste. Soils that have recently been brought into cultivation may have a higher content of organic matter in the surface layer than similar soils that have been cultivated for a long time. Conservation tillage can increase the content of organic matter in the surface layer. A lower content of organic matter is common where the surface layer has been partly or completely removed by erosion or land smoothing. Current soil tests should be used for specific organic matter determinations.

### **Soil Fertility**

The soils in Person County generally are low in natural fertility. They are naturally acid. Additions of lime and fertilizer are needed for the production of most kinds of crops.

Liming requirements are a major concern on cropland. The acidity level in the soil affects the availability of many nutrients to plants and the activity of beneficial bacteria. Lime also neutralizes exchangeable aluminum in the soil and thus counteracts the adverse effects of high levels of aluminum on many crops. Liming adds calcium (from calcitic lime) or calcium and magnesium (from dolomitic lime) to the soil.

A soil test is a guide to what amount and kind of lime should be used. The desired pH levels may differ, depending on the soil properties and the crop to be grown.

Nitrogen fertilizer is required for most crops. It is generally not required, however, for peanuts and clover, in some rotations of soybeans, or for alfalfa that is established. A reliable soil test is not available for predicting nitrogen requirements. Appropriate rates of nitrogen application are described in the section "Yields per Acre."

Because nitrogen can be readily leached from sandy soils, applications may be needed on these soils more than once during the growing season.

Soil tests can indicate the need for phosphorus and potassium fertilizer. They are needed because phosphorus and potassium tend to build up in the soil.

### **Yields per Acre**

The average yields per acre that can be expected of the principal crops under a high level of management

are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The appropriate rate of nitrogen for corn on soils that have a yield potential of 125 to 150 bushels per acre should be 140 to 160 pounds per acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by a crop is an unnecessary expense and causes a hazard of water pollution. If corn or cotton is grown after the harvest of soybeans or peanuts, nitrogen rates can be reduced by about 20 to 30 pounds per acre.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the North Carolina Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

## Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland (10). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

*Capability classes*, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

*Capability subclasses* are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial

drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w*, *s*, or *c*.

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in table 5.

## Woodland Management and Productivity

Albert Coffey, forester, Natural Resources Conservation Service, helped prepare this section.

Owners of woodland in Person County have many objectives. These objectives include producing timber; conserving wildlife, soil, and water; preserving aesthetic values; and providing opportunities for recreational activities, such as commercial hunting. Public demand for clean water and recreational areas creates pressures and opportunities for owners of woodland.

For purposes of forest inventory, the predominant forest types identified in Person County are as described in the following paragraphs (9):

*Loblolly-shortleaf pine*. This forest type covers 39,100 acres. It consists of more than 50 percent loblolly pine and shortleaf pine in association with red pine, white pine, oak, gum, hickory, and yellow-poplar.

*Oak-pine*. This forest type covers 15,300 acres. It consists of more than 50 percent hardwoods, including oak, gum, hickory, and yellow-poplar. Pine makes up 25 to 50 percent of the forest type.

*Oak-hickory*. This forest type covers 83,750 acres. It consists of 50 percent upland oaks and hickory, in association with elm, maple, yellow-poplar, and black walnut.

*Oak-gum-cypress*. This forest type covers 11,550 acres. It consists predominantly of oak, gum, and cypress, in association with willow, beech, and red maple.

The landowner interested in timber production is faced with the challenge of producing greater yields from smaller areas. Meeting this challenge requires intensive management and silvicultural practices. Many modern silvicultural techniques resemble those long practiced in agriculture. They include establishing, weeding, and thinning a desirable young stand; propagating the more productive species and genetic varieties; providing short rotations and complete fiber utilization; controlling insects, diseases, and weeds; and improving tree growth by applications of fertilizer and

the installation of a drainage system. Even though timber crops require decades to grow, the goal of intensive management is similar to the goal of intensive agriculture. This goal is to produce the greatest yield of the most valuable crop as quickly as possible.

Commercial forests cover about 149,800 acres, or about 60 percent of the land area of Person County (9). Commercial forest is land that is producing or is capable of producing crops of industrial wood and that has not been withdrawn from timber production. Loblolly pine is the most important timber species in the county because it grows fast, is adapted to the soil and climate, brings the highest average sale value per acre, and is easy to establish and manage.

One of the first steps in planning intensive woodland management is to determine the potential productivity of the soil for several alternative tree species. The most productive and valued trees are then selected for each soil type. Site and yield information enables a forest manager to estimate future wood supplies. These estimates are the basis of realistic decisions concerning expenses and profits associated with intensive woodland management, land acquisition, or industrial investments.

The potential productivity of woodland depends on physiography, soil properties, climate, and the effects of past management. Specific soil properties and site characteristics, including soil depth, texture, structure, and depth to the water table, affect forest productivity primarily by influencing available water capacity, aeration, and root development. The net effects of the interaction of these soil properties and site characteristics determine the potential site productivity.

Other site factors are also important. The gradient and length of slopes affect water movement and availability. In mountainous areas, elevation and aspect affect the amount of sunlight a site receives and the rate of evaporation. Sites on south-facing slopes are warmer and drier than those on north-facing slopes. The best sites are generally on north- and east-facing slopes in the lower areas, in sheltered coves, and in gently sloping, concave areas. The amount of rainfall and length of growing season influence site productivity.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. The common forest

understory plants also are listed. Table 6 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

Table 6 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare per year. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of the slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large amount of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, the use of wheeled equipment becomes more

difficult. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of the naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

The *potential productivity of common trees* on a soil is expressed as a *site index* and a *volume* number. The predominant common trees are listed in table 6 in the order of their observed occurrence. Additional species that commonly occur on the soils may be listed in the detailed soil map unit descriptions. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

For soils that are commonly used for timber production, the yield is predicted in cubic feet per acre per year. It is predicted at the point where mean annual increment culminates. The estimates of the productivity of the soils in this survey is based mainly on loblolly pine, shortleaf pine, and yellow-poplar (3, 5).

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years (50 years in this survey). This index applies to fully stocked, even-aged, unmanaged stands. Productivity of a site can be improved through management practices, such as bedding, ditching, managing water, applying fertilizer, and planting genetically improved species.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year.

*Trees to plant* are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation. If hardwoods are desired on a forest site, acceptable species should naturally reproduce from seeds and sprouts. Special site preparation techniques may be required.

## Recreation

In table 7, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 7, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil

properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 7 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

*Camp areas* require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

*Picnic areas* are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

*Playgrounds* require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock should be considered.

*Paths and trails* for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

*Golf fairways* are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

## Wildlife Habitat

John P. Edwards, biologist, Natural Resources Conservation Service, and Larry Warlick, wildlife biologist, North Carolina Wildlife Resources Commission, helped prepare this section.

Person County has a diversity of wildlife habitat and is particularly suited to small game species, such as quail, rabbit, dove, and squirrel. Throughout the county, the soils are generally well suited to the establishment and growth of most species of native and introduced wildlife food and cover plants.

Deer and turkey are the big game species in Person County. The largest concentrations of both species are in the western half of the county. The Cecil and Appling soils in this area are well adapted to row crops, and deer use corn and soybeans as a food supply. If this area is planted in a cover crop, it is used by turkey and deer in cold months. Also, the frequently flooded Chewacla and Wehadkee soils are densely wooded and provide good cover for deer. The population of deer is adequate throughout the county. Limiting the number of deer is necessary to prevent overpopulation. The steep Wilkes and Wedowee soils have a large acreage of hardwood forests and are the best habitat for turkey in the county. The population of turkey that can be hunted is scattered throughout the county and can be increased with good management and protection.

The population of waterfowl is generally good. It is highest on the many creeks and rivers in the county. The Chewacla and Wehadkee soils along the North and South Flat Rivers and the large creeks provide the best habitat for waterfowl in the county. Hyco Reservoir, Mayo Reservoir, City Lake, Chub Lake, and about 2,500 farm ponds also provide habitat for waterfowl. The potential population of wood ducks is high in these areas if proper cover and food supplies are maintained. Migratory species, such as mallards and black ducks, are also common during the winter.

Beavers are the most abundant furbearers in the county. The Chewacla and Wehadkee soils on flood plains along the smaller streams provide excellent habitat for beavers (fig. 11). The population of beavers is high along most of the drainageways in the county. It has increased so much in these areas that many landowners consider them pests.

The agricultural patterns of the county are very favorable to resident wildlife species. Relatively small farms that have a good mixture of cropland and woodland provide an abundance of edge habitat. This is very important to all of the wildlife species in the county.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and





Figure 11.—A beaver dam in an area of Chewacla and Wehadkee loams, frequently flooded.

distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 8, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The ratings in table 8 are intended to be

used as a guide and are not site specific. Onsite investigation is needed for individual management plans.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or

maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

*Grain and seed crops* are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

*Grasses and legumes* are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, clover, and alfalfa.

*Wild herbaceous plants* are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, and pokeberry.

*Hardwood trees* and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are autumn-olive and crabapple.

*Coniferous plants* furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

*Wetland plants* are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland

plants are smartweed, wild millet, cattail, rushes, sedges, and reeds.

*Shallow water areas* have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

*Habitat for openland wildlife* consists of cropland, pasture, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

*Habitat for woodland wildlife* consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, thrushes, woodpeckers, squirrels, gray fox, raccoon, white-tailed deer, and black bear.

*Habitat for wetland wildlife* consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, muskrat, mink, and beaver.

## Engineering

Bill Thayer, area engineer, Natural Resources Conservation Service, helped prepare this section.

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

*Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.*

*The information is not site specific and does not eliminate the need for onsite investigation of the soils or*

*for testing and analysis by personnel experienced in the design and construction of engineering works.*

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the "Glossary."

### **Building Site Development**

Table 9 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not

favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

*Shallow excavations* are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm, dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

*Dwellings and small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

*Lawns and landscaping* require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table,



depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established. Soil tests are essential to determine liming and fertilizer needs. Help in making soil tests or in deciding what soil additive, if any, should be used can be obtained from the office of the Person Soil and Water Conservation District or the local office of the North Carolina Cooperative Extension Service.

### Sanitary Facilities

Table 10 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 10 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if

slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. The animal waste lagoons commonly used in farming operations are not considered in the ratings. They are generally deeper than the lagoons referred to in the table and rely on anaerobic bacteria to decompose waste materials.

Table 10 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope or bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

*Sanitary landfills* are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 10 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, depth to a high water table, slope, and flooding affect both types of landfill.

Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

### Construction Materials

Table 11 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site

features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* have more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. These soils have layers of suitable material, but the material is less than 3 feet thick.

*Sand* and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 11, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale, siltstone, and weathered granite saprolite, are not considered to be sand and gravel.

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and

fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a high water table, rock fragments, depth to bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

### Water Management

Table 12 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

*Pond reservoir areas* hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage

capacity of the reservoir area. Ponds that are less than about 2 acres in size are not shown on the soil maps because of the scale of mapping.

*Embankments, dikes, and levees* are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, mica, or salts or sodium. Depth to a high water table affects the amount of usable material. It also affects trafficability.

*Drainage* is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, susceptibility to flooding, subsidence of organic layers, and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

*Irrigation* is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the availability of suitable irrigation water, the depth of the root zone, and soil reaction.

*Terraces and diversions* are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and

diversions. Maintenance of terraces and diversions is adversely affected by a restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability.

*Grassed waterways* are natural or constructed channels, generally broad and shallow, that conduct

surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of soil blowing, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

# Soil Properties

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Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed (8). During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

## Engineering Index Properties

Table 13 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

*Depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages, by weight, of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that

is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, by volume, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

*Classification* of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest.

*Rock fragments* from 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit and plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

## Physical and Chemical Properties

Table 14 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Clay* as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at  $\frac{1}{3}$ -bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Permeability* refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and

texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time. It is the difference between the amount of soil water at field moisture capacity and the amount at wilting point.

*Soil reaction* is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Shrink-swell potential* is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

*Erosion factor K* indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on

percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In table 14, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

## Soil and Water Features

Table 15 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep or very deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to very deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly

impervious material. These soils have a very slow rate of water transmission.

*Flooding*, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 15 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none*, *rare*, *occasional*, or *frequent*. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

*High water table* (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 15 are the depth to the seasonal high water table; the kind of water table, that is, *perched* or *apparent*; and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 15.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A



*perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

*Depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of

corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.



# Classification of the Soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories (11). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 16 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

**ORDER.** Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

**SUBORDER.** Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

**GREAT GROUP.** Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning river or flooding, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

**SUBGROUP.** Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

**FAMILY.** Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, thermic Typic Fluvaquents.

**SERIES.** The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the underlying material within a series.

## Soil Series and Their Morphology

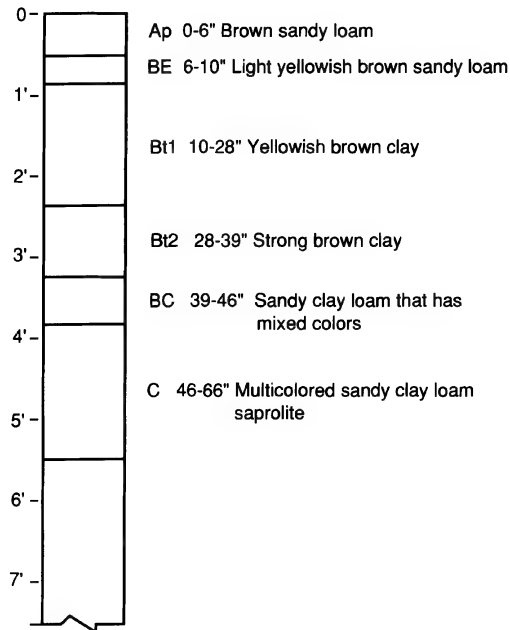
In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described (fig. 12). The location of the typical pedon is described, and coordinates generally are identified by the State plane grid system or by longitude and latitude. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (12). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (11). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

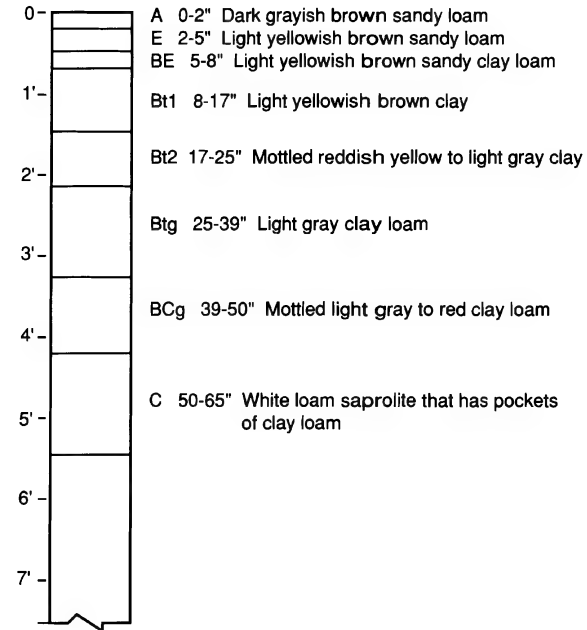
### PROFILE OF APPLING SOIL

MAIN USE: Cropland  
 LIMITATIONS: Susceptibility to erosion,  
 clayey subsoil



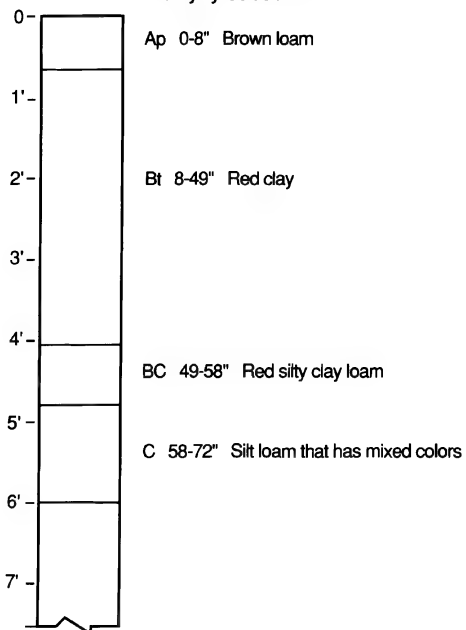
### PROFILE OF HELENA SOIL

MAIN USE: Cropland  
 LIMITATIONS: Susceptibility to erosion, wetness, slow permeability, high shrink-swell potential



### PROFILE OF GEORGEVILLE SOIL

MAIN USE: Cropland  
 LIMITATIONS: Susceptibility to erosion,  
 clayey subsoil



### PROFILE OF WILKES SOIL

MAIN USE: Woodland  
 LIMITATION: Shallow to bedrock

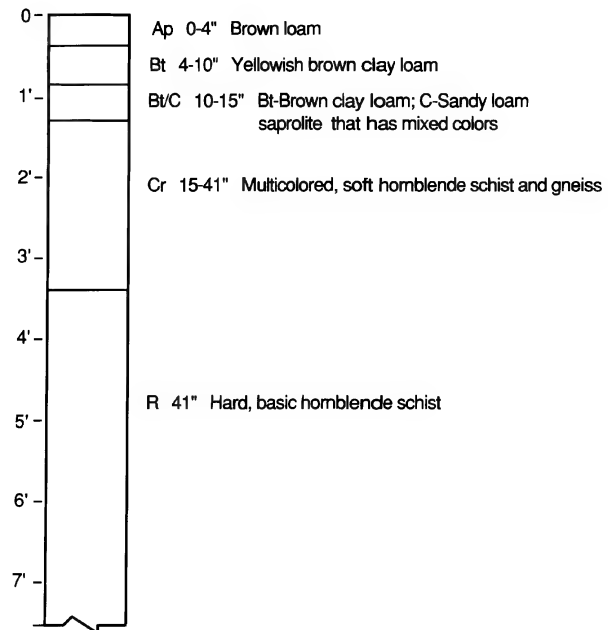


Figure 12.—Profiles, major uses, and limitations of four contrasting soils in Person County.

## Appling Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Upland ridges and side slopes

*Parent material:* Material weathered from felsic crystalline rocks

*Slope range:* 2 to 10 percent

*Classification:* Clayey, kaolinitic, thermic Typic Kanhapludults

### Typical Pedon

Appling sandy loam, 2 to 6 percent slopes; about 4.6 miles west of Roxboro, 0.5 mile northeast of Olive Hill on Secondary Road 1342, about 0.3 mile north on a farm road, and 15 feet west of the road (State plane coordinates 1,980,000 feet E., 975,000 feet N.):

Ap—0 to 6 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; common fine and medium roots; common fine pores; slightly acid; abrupt smooth boundary.

BE—6 to 10 inches; light yellowish brown (10YR 6/4) sandy loam; weak medium subangular blocky structure; few fine and medium roots; few fine and common medium pores; strongly acid; clear smooth boundary.

Bt1—10 to 28 inches; yellowish brown (10YR 5/8) clay; few medium prominent red (2.5YR 4/8) and few fine prominent reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; friable; moderately plastic and slightly sticky; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—28 to 39 inches; strong brown (7.5YR 5/6) clay; common medium distinct red (2.5YR 4/8) and few medium distinct brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; friable; moderately plastic and slightly sticky; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—39 to 46 inches; mixed yellowish red (5YR 4/8), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/8) sandy clay loam; weak fine and medium subangular blocky structure; friable; moderately plastic and slightly sticky; few fine and medium pores; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

C—46 to 66 inches; red, strong brown, yellowish brown, white, and olive gray sandy clay loam saprolite; massive; friable; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to more than 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid or strongly acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* 0 to 10 percent throughout the profile

*Ap or A horizon:*

Hue—5YR to 2.5Y

Value—3 to 5

Chroma—2 to 6

Texture—sandy loam

*E horizon (if it occurs):*

Hue—7.5YR to 2.5Y

Value—5 or 6

Chroma—4 to 6

Texture—sandy loam

*BE or BA horizon:*

Hue—5YR to 10YR

Value—5 or 6

Chroma—3 to 8

Texture—sandy clay loam or sandy loam

*Bt horizon:*

Hue—5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Mottles—shades of red, yellow, or brown

Texture—sandy clay loam, clay loam, loam, or clay

*BC horizon:*

Hue—5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Mottles—shades of red, yellow, or brown

Texture—sandy clay loam, clay loam, or loam

*C horizon:*

Color—multicolored in shades of red, brown, yellow, white, or gray in some pedons and hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8 in other pedons

Mottles—shades of red, yellow, gray, or brown

Texture—loam, sandy loam, or sandy clay loam saprolite

## Cecil Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Upland ridges and side slopes

*Parent material:* Material weathered from felsic crystalline rocks

*Slope range:* 2 to 10 percent

*Classification:* Clayey, kaolinitic, thermic Typic Kanhapludults

### Typical Pedon

Cecil sandy loam, 2 to 6 percent slopes; about 4.5 miles southwest of Roxboro, 0.2 mile west of Roseville on Secondary Road 1162, about 1.3 miles northwest on Secondary Road 1159, and 75 feet southeast of the road (State plane coordinates 1,981,200 feet E., 952,800 feet N.):

Ap—0 to 7 inches; brown (7.5YR 4/4) sandy loam; moderate medium granular structure; friable; common fine and medium roots; common fine pores; few rock fragments; slightly acid; abrupt smooth boundary.

BE—7 to 12 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; few fine and medium roots; few fine and common medium pores; strongly acid; abrupt smooth boundary.

Bt1—12 to 20 inches; red (2.5YR 4/8) clay; common medium distinct red (5YR 5/8) and common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; moderately plastic and slightly sticky; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—20 to 43 inches; red (2.5YR 4/8) clay; common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; moderately plastic and slightly sticky; few fine roots; few fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—43 to 52 inches; red (2.5YR 4/8) clay loam; weak fine and medium subangular blocky structure; friable; moderately plastic and slightly sticky; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

C—52 to 64 inches; reddish yellow (5YR 6/8) fine sandy loam saprolite; few coarse distinct reddish yellow (7.5YR 7/6) and few fine distinct pink (7.5YR 8/4) mottles; massive; friable; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to more than 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid or strongly acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* 0 to 10 percent throughout the profile

*Ap or A horizon:*

Hue—2.5YR to 10YR

Value—3 to 5

Chroma—3 to 8

Texture—sandy loam

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 8

Texture—sandy loam or loam

*BE horizon:*

Hue—2.5YR to 7.5YR

Value—4 to 6

Chroma—3 to 8

Texture—sandy clay loam, loam, or clay loam

*Bt horizon:*

Hue—10R or 2.5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of red, yellow, or brown

Texture—clay, sandy clay, or clay loam

*BC horizon (if it occurs):*

Hue—10R to 5YR

Value—4 to 6

Chroma—4 to 8

Mottles—shades of yellow or brown

Texture—sandy clay loam or clay loam

*C horizon:*

Hue—2.5YR to 10YR

Value—4 to 8

Chroma—1 to 8

Texture—loamy saprolite

### Chewacla Series

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Permeability:* Moderate

*Landscape position:* Flood plains

*Parent material:* Alluvium derived from weathered mixed igneous and metamorphic rocks

*Slope range:* 0 to 2 percent

*Classification:* Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts

### Typical Pedon

Chewacla loam, in an area of Chewacla and Wehadkee loams, frequently flooded; about 7.5 miles north of Roxboro, 1.4 miles southwest of Woodsdale on Secondary Road 1322, and 100 feet north of the road (State plane coordinates 2,005,700 feet E., 994,700 feet N.):

**A**—0 to 9 inches; brown (10YR 4/3) loam; weak fine granular structure; friable; common fine and few medium roots; common fine and few medium pores; strongly acid; clear wavy boundary.

**Bw1**—9 to 21 inches; brown (10YR 4/3) loam; common medium faint grayish brown (10YR 5/2) and common fine prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine, medium, and coarse pores; few fine flakes of mica; moderately acid; gradual wavy boundary.

**Bw2**—21 to 33 inches; light olive brown (2.5Y 5/4) loam; many medium distinct grayish brown (2.5Y 5/2) and common fine prominent strong brown (7.5YR 5/8) mottles; weak medium and coarse subangular blocky structure; friable; few fine roots; few fine, medium, and coarse pores; few fine flakes of mica; moderately acid; clear wavy boundary.

**Bg1**—33 to 49 inches; dark gray (10YR 4/1) clay loam; many medium prominent yellowish brown (10YR 5/6) and common fine prominent strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; friable; slightly plastic and slightly sticky; common fine and medium pores; common fine flakes of mica; slightly acid; clear wavy boundary.

**Bg2**—49 to 58 inches; mottled gray (N 5/0), yellowish brown (10YR 5/6), and light gray (10YR 6/1) sandy clay loam; weak coarse subangular blocky structure; friable; slightly plastic and slightly sticky; common fine and medium pores; common fine flakes of mica; slightly acid; clear wavy boundary.

**Cg**—58 to 72 inches; mottled light gray (10YR 6/1), grayish brown (2.5Y 5/2), gray (N 5/0), and yellowish brown (10YR 5/8) sandy loam that has thin strata of sand; massive; friable; common fine flakes of mica; slightly acid.

### Range in Characteristics

*Thickness of the solum:* 15 to 70 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid to slightly acid, except where the surface layer has been limed

*Content of rock fragments:* None or few

#### *A horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam

#### *BA horizon (if it occurs):*

Hue—7.5YR to 2.5Y

Value—4 to 7

Chroma—3 to 8

Texture—loam or silt loam

#### *Bw horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 7

Chroma—3 to 8

Mottles—shades of brown, yellow, or red

Texture—loam, sandy clay loam, silty clay loam, or clay loam

#### *Bg horizon:*

Color—mottled in shades of gray, brown, yellow, or red in some pedons and hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2 or neutral in hue and value of 4 to 7 in other pedons

Mottles—shades of brown, yellow, or red

Texture—loam, sandy clay loam, silty clay loam, or clay loam

#### *Cg horizon:*

Color—mottled in shades of gray, brown, yellow, or red in some pedons and hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2 or neutral in hue and value of 4 to 7 in other pedons

Mottles—shades of brown, yellow, or red

Texture—loam, sandy clay loam, silty clay loam, or clay loam and varying from extremely gravelly sand to clay below a depth of 40 inches

## Enon Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Landscape position:* Upland ridges, knolls, and side slopes

*Parent material:* Material weathered from mafic or mixed felsic to mafic crystalline rocks

*Slope range:* 2 to 10 percent

*Classification:* Fine, mixed, thermic Ultic Hapludalfs

### Typical Pedon

Enon fine sandy loam, 2 to 6 percent slopes; about 6.5 miles northwest of Roxboro, 0.9 mile north of Ceppo on Secondary Road 1336, about 0.3 mile west on Secondary Road 1377, and 100 feet south of the road, in a wooded area (State plane coordinates 1,984,000 feet E., 989,600 feet N.):

**Oi**—1 inch to 0; partly decomposed leaves, twigs, and pine needles.

**A**—0 to 2 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; common fine pores; strongly acid; abrupt smooth boundary.

**E**—2 to 4 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak medium granular structure; few fine and

medium roots; friable; common fine, medium, and coarse roots; few fine pores; strongly acid; clear wavy boundary.

Bt1—4 to 7 inches; light olive brown (2.5Y 5/4) clay loam; weak fine subangular blocky structure; friable; slightly plastic and slightly sticky; few fine and medium roots; few fine and medium pores; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—7 to 27 inches; yellowish brown (10YR 5/6) clay; few fine prominent olive (5Y 5/4) mottles; moderate fine and medium subangular blocky structure; very firm; moderately plastic and very sticky; few fine roots; few fine pores; common prominent clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt3—27 to 33 inches; mixed yellowish brown (10YR 5/6), strong brown (7.5YR 5/8), and olive brown (2.5Y 4/4) clay; weak medium subangular blocky structure; very firm; moderately plastic and moderately sticky; few fine roots; few fine pores; common distinct clay films on faces of peds; neutral; gradual wavy boundary.

C—33 to 64 inches; yellowish brown, strong brown, olive, yellowish red, and black sandy loam saprolite that has pockets of clay; massive; friable; moderately plastic and moderately sticky; 10 percent soft rock fragments in the lower part; neutral.

#### Range in Characteristics

*Thickness of the solum:* 20 to 44 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Strongly acid to slightly acid in the A and E horizons, except where the surface layer has been limed, and strongly acid to slightly alkaline in the B and C horizons

*Content of rock fragments:* 0 to 10 percent throughout the profile

#### A or Ap horizon:

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 4

Texture—fine sandy loam

#### E horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—2 to 4

Texture—loam, sandy loam, or fine sandy loam

#### Bt horizon:

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Mottles—shades of red, yellow, olive, or brown

Texture—clay or clay loam

#### C horizon:

Color—multicolored in shades of red, brown, yellow, black, olive, or white in some pedons and hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8 in other pedons

Mottles—shades of red, yellow, or brown

Texture—loam, sandy loam, or sandy clay loam saprolite

### Georgeville Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Upland ridges, knolls, and side slopes

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

*Slope range:* 2 to 10 percent

*Classification:* Clayey, kaolinitic, thermic Typic Hapludults

#### Typical Pedon

Georgeville loam, 2 to 6 percent slopes; about 5.2 miles south of Roxboro on U.S. Highway 501, about 2.0 miles east on Secondary Road 1708, about 0.2 mile north on a farm road, and 20 feet east of the road, in a field (State plane coordinates 2,016,800 feet E., 938,800 feet N.):

Ap—0 to 8 inches; brown (7.5YR 4/4) loam; weak coarse granular structure; friable; common fine and few medium roots; few fine pores; slightly acid; abrupt smooth boundary.

Bt—8 to 49 inches; red (2.5YR 4/8) clay; few fine prominent brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; friable; moderately plastic and slightly sticky; common fine roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—49 to 58 inches; red (2.5YR 4/8) silty clay loam; common medium prominent brownish yellow (10YR 6/8) and red (10R 4/8) mottles; weak coarse subangular blocky structure; friable; moderately plastic and slightly sticky; few fine pores; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

C—58 to 72 inches; mixed red (2.5YR 4/8), red (10R 4/8), brownish yellow (10YR 6/8), and reddish yellow (7.5YR 6/8) silt loam; massive; friable; very strongly acid.

**Range in Characteristics**

*Thickness of the solum:* 30 to more than 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid to moderately acid in the A horizon, except where the surface layer has been limed, and very strongly acid or strongly acid in the B and C horizons

*Content of rock fragments:* 0 to 15 percent in the A and E horizons and 0 to 10 percent in the B and C horizons

*Ap or A horizon:*

Hue—5YR to 2.5Y

Value—4 or 5

Chroma—3 to 8

Texture—loam or clay loam

*E horizon (if it occurs):*

Hue—5YR to 2.5Y

Value—4 or 5

Chroma—3 to 8

Texture—loam

*Bt horizon:*

Hue—10R or 2.5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of yellow or brown

Texture—clay or silty clay

*BC horizon:*

Hue—10R to 5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of yellow, red, or brown

Texture—silty clay loam, silt loam, loam, or clay loam

*C horizon:*

Hue—10R to 10YR

Value—4 to 6

Chroma—3 to 8

Mottles—shades of brown, yellow, or gray

Texture—silt loam, loam, very fine sandy loam, or fine sandy loam

**Goldston Series**

*Depth class:* Shallow

*Drainage class:* Well drained to excessively drained

*Permeability:* Moderately rapid

*Landscape position:* Upland ridges, side slopes, and small mountainsides

*Parent material:* Material weathered from fine grained metamorphic rocks

*Slope range:* 4 to 45 percent

*Classification:* Loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts

**Typical Pedon**

Goldston channery silt loam, 4 to 15 percent slopes; about 5.2 miles northeast of Roxboro on North Carolina Highway 49, about 3.5 miles east on Secondary Road 1556, about 0.75 mile south on a farm road, and 60 feet west of the road, in a field (State plane coordinates 2,046,400 feet E., 977,800 feet N.):

Ap—0 to 8 inches; brown (10YR 5/3) channery silt loam; weak medium granular structure; very friable; few medium roots; few fine pores; 30 percent slate fragments; moderately acid; abrupt smooth boundary.

Bw—8 to 18 inches; light yellowish brown (10YR 6/4) very channery silt loam; weak medium subangular blocky structure; friable; slightly plastic and slightly sticky; common fine roots; common fine and medium pores; 45 percent slate fragments; moderately acid; clear wavy boundary.

Cr—18 to 25 inches; soft, multicolored, fractured slate that can be dug by hand tools; silt loam in cracks that are 5 to 15 inches apart; strongly acid; abrupt smooth boundary.

R—25 inches; light brownish gray and yellowish brown, hard, fractured slate.

**Range in Characteristics**

*Thickness of the solum:* 10 to 20 inches

*Depth to bedrock:* 10 to 20 inches to soft bedrock and 20 to 40 inches to hard bedrock

*Reaction:* Extremely acid to strongly acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* 25 to 50 percent throughout the profile

*Ap or A horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—channery silt loam

*Bw horizon:*

Hue—7.5YR to 2.5Y

Value—5 to 7

Chroma—3 to 8

Texture—silt loam, fine sandy loam, or the channery or very channery analogs of those textures

*Cr horizon:*

Soft, fractured slate that can be dug by hand tools

*R horizon:*

Hard, fractured slate bedrock

## Helena Series

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Permeability:* Slow

*Landscape position:* Upland ridges, toe slopes, and low areas at the head of drainageways

*Parent material:* Material weathered from mixed felsic and mafic crystalline rocks

*Slope range:* 2 to 10 percent

*Classification:* Clayey, mixed, thermic Aquic Hapludults

### Typical Pedon

Helena sandy loam, 2 to 6 percent slopes; about 1.5 miles south of Roseville on North Carolina Highway 49, about 0.3 mile east on a farm road, and 200 feet south of the road (State plane coordinates 1,985,500 feet E., 940,400 feet N.):

A—0 to 2 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; common fine and medium and few coarse roots; common fine pores; very strongly acid; abrupt smooth boundary.

E—2 to 5 inches; light yellowish brown (2.5Y 6/4) sandy loam; few fine prominent reddish yellow (7.5YR 6/8) mottles; weak medium granular structure; few fine, medium, and coarse roots; few fine and common medium pores; very strongly acid; clear wavy boundary.

BE—5 to 8 inches; light yellowish brown (2.5Y 6/4) sandy clay loam; few fine prominent reddish yellow (7.5YR 6/8) mottles; weak medium subangular blocky structure; friable; moderately plastic and slightly sticky; few fine, medium, and coarse roots; common fine and medium pores; very strongly acid; gradual wavy boundary.

Bt1—8 to 17 inches; light yellowish brown (2.5Y 6/4) clay; common medium distinct yellowish brown (10YR 5/4), common medium prominent red (2.5YR 5/8), and common medium distinct light gray (10YR 6/1) mottles; moderate medium subangular blocky structure; firm; moderately plastic and slightly sticky; few fine roots; few fine pores; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—17 to 25 inches; mottled light yellowish brown (2.5Y 6/4), yellowish brown (10YR 5/4), red (2.5YR 5/8), light gray (10YR 6/1), and reddish yellow (7.5YR 6/8) clay; moderate medium subangular blocky structure; firm; moderately plastic and slightly sticky; few fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg—25 to 39 inches; light gray (10YR 6/1) clay loam;

common medium distinct red (2.5YR 5/8) and yellowish brown (10YR 5/6) and few fine distinct reddish yellow (7.5YR 6/8) mottles; weak coarse subangular blocky structure; firm; moderately plastic and slightly sticky; few fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BCg—39 to 50 inches; mottled light gray (10YR 6/1), strong brown (7.5YR 5/8), brownish yellow (10YR 6/8), and red (2.5YR 5/8) clay loam; weak coarse subangular blocky structure; friable; slightly plastic and slightly sticky; few fine and medium pores; very strongly acid; gradual wavy boundary.

C—50 to 65 inches; white (10YR 8/1) loam saprolite that has pockets of clay loam; few medium prominent yellowish brown (10YR 5/6) and common medium prominent strong brown (7.5YR 5/8) mottles; massive; friable; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Extremely acid to strongly acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* 0 to 10 percent throughout the profile

*A or Ap horizon:*

Hue—10YR or 2.5Y

Value—3 to 6

Chroma—1 to 4

Texture—sandy loam

*E horizon:*

Hue—10YR to 5Y

Value—5 to 8

Chroma—2 to 4

Mottles—shades of red, yellow, or brown

Texture—sandy loam, fine sandy loam, or loam

*BE or BA horizon:*

Hue—7.5YR to 5Y

Value—5 to 8

Chroma—3 to 8

Mottles—shades of red, yellow, or brown

Texture—sandy clay loam or clay loam

*Bt horizon:*

Hue—7.5YR to 5Y

Value—5 to 8

Chroma—3 to 8

Mottles—shades of red, yellow, gray, or brown

Texture—clay loam, sandy clay, or clay

*Btg horizon:*

Hue—10YR to 2.5Y

Value—4 to 7



Chroma—1 or 2

Mottles—shades of yellow, brown, or red

Texture—clay loam, sandy clay, or clay

**BCg horizon:**

Color—mottled in shades of gray, brown, yellow, and red in some pedons and hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2 in other pedons

Mottles—shades of red, yellow, gray, or brown

Texture—sandy clay loam, clay loam, or loam

**C horizon:**

Color—multicolored in shades of red, brown, yellow, white, or gray in some pedons and hue of 5YR to 5Y, value of 5 to 8, and chroma of 1 to 8 in other pedons

Mottles—shades of red, yellow, brown, or gray

Texture—loam, sandy loam, or sandy clay loam  
saprolite that has pockets of clay or clay loam

## Herndon Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Upland ridges and side slopes

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

*Slope range:* 2 to 10 percent

*Classification:* Clayey, kaolinitic, thermic Typic

Hapludults

### Typical Pedon

Herndon loam, 2 to 6 percent slopes; about 1.2 miles southwest of Roseville on North Carolina Highway 49, about 0.9 mile east on Secondary Road 1150, about 0.1 mile south on Secondary Road 1149, about 0.4 mile south on a farm road, and 100 feet east of the road (State plane coordinates 1,996,200 feet E., 946,600 feet N.):

Ap—0 to 7 inches; yellowish brown (10YR 5/4) loam; weak medium granular structure; friable; common fine and medium roots; few fine pores; strongly acid; abrupt smooth boundary.

Bt1—7 to 16 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; friable; moderately plastic and slightly sticky; few medium roots; few fine pores; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—16 to 29 inches; strong brown (7.5YR 5/8) clay; common medium distinct yellowish red (5YR 5/6) and few fine prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure;

friable; moderately plastic and moderately sticky; few medium roots; few fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—29 to 41 inches; strong brown (7.5YR 5/8) clay; common medium distinct yellowish red (5YR 5/6) and common medium prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure; friable; slightly plastic and slightly sticky; few fine pores; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt4—41 to 58 inches; yellowish red (5YR 5/6) silty clay loam; common medium prominent red (2.5YR 4/8) and yellow (10YR 7/8) mottles; weak medium subangular blocky structure; friable; slightly plastic and slightly sticky; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

C—58 to 70 inches; pinkish white, yellow, red, and yellowish red silt loam saprolite; massive; friable; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 30 to more than 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid to slightly acid in the A horizon, except where the surface layer has been limed, and extremely acid to strongly acid in the B and C horizons

*Content of rock fragments:* 0 to 15 percent in the A and E horizons and 0 to 10 percent in the B and C horizons

**Ap or A horizon:**

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 6

Texture—loam

**E horizon (if it occurs):**

Hue—5YR to 10YR

Value—5 to 7

Chroma—3 to 6

Texture—loam

**BE horizon (if it occurs):**

Hue—10YR

Value—5 or 6

Chroma—4 to 6

Texture—silty clay loam or loam

**Bt horizon:**

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Mottles—shades of yellow, brown, or red

Texture—clay, silty clay, clay loam, or silty clay loam

*C horizon:*

Color—multicolored in shades of white, yellow, red, and brown

Texture—silt loam, loam, or fine sandy loam saprolite

**Lignum Series**

*Depth class:* Deep

*Drainage class:* Moderately well drained or somewhat poorly drained

*Permeability:* Very slow

*Landscape position:* Upland ridges, toe slopes, and low areas at the head of drainageways

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

*Slope range:* 2 to 6 percent

*Classification:* Clayey, mixed, thermic Aquic Hapludults

**Typical Pedon**

Lignum loam, 2 to 6 percent slopes; about 6.9 miles southeast of Roxboro and 0.3 mile east of Surl on U.S. Highway 158, about 1.6 miles northeast on Secondary Road 1567, about 1.0 mile north on Secondary Road 1571, about 0.2 mile east on Secondary Road 1565, and 25 feet north of the road (State plane coordinates 2,040,100 feet E., 952,800 feet N.):

Ap—0 to 6 inches; light yellowish brown (2.5Y 6/4) loam; weak fine granular structure; very friable; common fine and few medium roots; few fine pores; 10 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bt1—6 to 8 inches; brownish yellow (10YR 6/8) silty clay loam; few medium prominent red (2.5YR 4/8) mottles; weak fine subangular blocky structure; friable; slightly plastic and slightly sticky; common fine and few medium roots; few fine and medium pores; 12 percent rock fragments; few distinct clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—8 to 14 inches; yellowish brown (10YR 5/8) clay; common medium distinct light gray (10YR 6/1), few medium distinct strong brown (7.5YR 5/8), and few medium prominent red (2.5YR 4/8) mottles; moderate coarse subangular blocky structure; firm; moderately plastic and slightly sticky; few fine and medium roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—14 to 28 inches; yellowish brown (10YR 5/8) clay; common medium distinct light gray (10YR 6/1), strong brown (7.5YR 5/8), and red (2.5YR 4/8) mottles; moderate medium and coarse subangular

blocky structure; firm; moderately plastic and slightly sticky; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg—28 to 35 inches; light gray (10YR 6/1) clay; common coarse prominent strong brown (7.5YR 5/8), common medium distinct brownish yellow (10YR 6/8), and few fine prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure; firm; moderately plastic and slightly sticky; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

C—35 to 56 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 6/1), pale olive (5Y 6/3), and strong brown (7.5YR 5/8) silt loam saprolite; massive; friable; very strongly acid; gradual wavy boundary.

Cr—56 to 62 inches; soft, dark colored, fractured schist that can be dug with difficulty by hand tools; silt loam in cracks that are 5 to 10 inches apart; very strongly acid.

**Range in Characteristics**

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* 40 to 60 inches to soft bedrock

*Reaction:* Very strongly acid or strongly acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* 0 to 15 percent throughout the profile

*Ap or A horizon:*

Hue—7.5YR to 2.5Y

Value—5 to 7

Chroma—1 to 4

Texture—loam

*BE or BA horizon (if it occurs):*

Hue—7.5YR to 2.5Y

Value—5 to 7

Chroma—3 to 8

Texture—loam, silty clay loam, or silt loam

*Bt horizon:*

Hue—7.5YR to 2.5Y

Value—5 to 7

Chroma—1 to 8

Mottles—shades of red, yellow, gray, or brown

Texture—silty clay, clay, silty clay loam, or clay loam

*C horizon:*

Color—mottled in shades of red, brown, yellow, olive, white, or gray

Texture—silt loam, sandy clay loam, or silty clay loam saprolite

*Cr horizon:*

Soft, fractured schist that can be dug with difficulty by hand tools

**Mecklenburg Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Landscape position:* Upland ridges, knolls, and side slopes

*Parent material:* Material weathered from mafic crystalline rocks

*Slope range:* 2 to 10 percent

*Classification:* Fine, mixed, thermic Ultic Hapludalfs

**Typical Pedon**

Mecklenburg loam, 2 to 6 percent slopes; about 9.0 miles south of Roxboro, 2.2 miles west of Hurdle Mills on Secondary Road 1107, and 60 feet northwest of the road, in a field (State plane coordinates 1,974,800 feet E., 919,300 feet N.):

Ap—0 to 6 inches; brown (7.5YR 4/4) loam; weak coarse granular structure; friable; common fine roots; common fine pores; common fine iron and manganese concretions; strongly acid; clear smooth boundary.

Bt1—6 to 15 inches; yellowish red (5YR 4/8) clay; moderate medium subangular blocky structure; firm; moderately plastic and moderately sticky; few fine roots; few fine pores; common distinct clay films on faces of peds; strongly acid; few fine iron and manganese concretions; moderately acid; clear wavy boundary.

Bt2—15 to 30 inches; yellowish red (5YR 4/8) clay; few fine prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; moderately plastic and moderately sticky; few fine roots; few fine pores; common prominent clay films on faces of peds; few fine iron and manganese concretions; moderately acid; gradual wavy boundary.

BC—30 to 38 inches; yellowish red (5YR 4/8) clay; common medium distinct strong brown (7.5YR 5/6) and few medium distinct red (2.5YR 5/8) and white (10YR 8/1) mottles; weak medium subangular blocky structure; friable; moderately plastic and moderately sticky; few fine roots; few fine and medium pores; few fine iron and manganese concretions; neutral; gradual wavy boundary.

C—38 to 62 inches; strong brown, brownish yellow, yellowish red, red, and white loam saprolite; massive; friable; slightly plastic and slightly sticky;

few fine iron and manganese concretions; neutral; abrupt smooth boundary.

Cr—62 to 68 inches; soft schist; soil material in rock fractures that are 5 to 10 inches apart.

**Range in Characteristics**

*Thickness of the solum:* 20 to 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Moderately acid to neutral throughout the profile

*Content of rock fragments:* 0 to 10 percent throughout the profile

*Ap or A horizon:*

Hue—5YR or 7.5YR

Value—4 or 5

Chroma—3 to 6

Texture—loam

*E horizon (if it occurs):*

Hue—5YR or 7.5YR

Value—4 to 6

Chroma—3 to 6

Texture—loam or sandy loam

*Bt horizon:*

Hue—2.5YR or 5YR

Value—4 to 6

Chroma—6 to 8

Mottles—shades of red, yellow, or brown

Texture—clay

*BC horizon:*

Hue—2.5YR to 7.5YR

Value—4 to 7

Chroma—4 to 8

Mottles—shades of red, yellow, white, or brown

Texture—clay, sandy clay loam, or clay loam

*C horizon:*

Color—multicolored in shades of red, brown, yellow, or white

Texture—loam, sandy loam, or sandy clay loam saprolite

*Cr horizon:*

Soft, weathered schist or other mafic crystalline rocks that can be dug with difficulty by hand tools

**Orange Series**

*Depth class:* Deep

*Drainage class:* Moderately well drained or somewhat poorly drained

*Permeability:* Slow

*Landscape position:* Upland ridges, depressions, and low areas at the head of drainageways

*Parent material:* Material weathered from mafic crystalline rocks

*Slope range:* 0 to 7 percent

*Classification:* Fine, montmorillonitic, thermic Albaquic Hapludalfs

### Typical Pedon

Orange gravelly loam, 2 to 7 percent slopes; about 6.9 miles southeast of Roxboro and 0.2 mile south of Surl on Secondary Road 1717, about 1.0 mile southwest on Secondary Road 1708, about 0.4 mile south on Secondary Road 1712, and 60 feet east of the road (State plane coordinates 2,025,100 feet E., 939,200 feet N.):

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak fine granular structure; friable; slightly plastic and slightly sticky; few fine and medium roots; few fine and medium pores; 25 percent pebbles; strongly acid; abrupt smooth boundary.

E—6 to 9 inches; light yellowish brown (2.5Y 6/4) gravelly loam; weak medium granular structure; friable; slightly plastic and slightly sticky; few fine and medium roots; few fine, medium, and coarse pores; 20 percent pebbles; strongly acid; clear wavy boundary.

Bt1—9 to 13 inches; yellowish brown (10YR 5/6) clay; common fine prominent red (2.5YR 4/8) and few fine distinct grayish brown (2.5Y 5/2) mottles; moderate medium subangular blocky structure; very firm; moderately plastic and very sticky; few fine roots; few fine pores; few distinct clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt2—13 to 29 inches; yellowish brown (10YR 5/6) clay; common medium prominent gray (10YR 6/1) and light gray (10YR 7/2) and few fine prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; very firm; moderately plastic and very sticky; few fine roots; few medium pores; common distinct clay films on faces of peds; moderately acid; clear wavy boundary.

C—29 to 42 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 6/1), strong brown (7.5YR 5/8), and red (2.5YR 4/8) silt loam; massive; friable; neutral; clear wavy boundary.

Cr—42 to 61 inches; soft, multicolored, fractured diorite and gabbro rock that can be dug with difficulty by hand tools; silt loam in cracks that are 5 to 10 inches apart; very strongly acid.

R—61 inches; hard diorite-gabbro rock.

### Range in Characteristics

*Thickness of the solum:* 20 to 36 inches

*Depth to bedrock:* 40 to 60 inches to soft bedrock

*Reaction:* Strongly acid to slightly acid in the A, E, and B horizons, except where the surface layer has been limed, and moderately acid to slightly alkaline in the C horizon

*Content of rock fragments:* 15 to 35 percent in the A and E horizons and 0 to 15 percent in the B and C horizons

*Ap or A horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—2 to 6

Texture—gravelly loam or loam

*E horizon:*

Hue—10YR to 5Y

Value—5 to 7

Chroma—2 to 4

Texture—gravelly loam or loam

*Bt horizon:*

Hue—7.5YR to 5Y

Value—4 to 6

Chroma—4 to 8

Mottles—shades of red, yellow, gray, or brown

Texture—clay, silty clay, silty clay loam, or clay loam

*C horizon:*

Color—mottled in shades of red, brown, yellow, olive, white, or gray

Texture—silt loam, sandy clay loam, or sandy loam

*Cr horizon:*

Soft, fractured, multicolored mafic or mixed mafic and felsic crystalline rock that can be dug by hand tools

*R horizon:*

Hard, fractured bedrock

### Pacolet Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Upland ridges, knolls, and side slopes

*Parent material:* Material weathered from felsic crystalline rocks

*Slope range:* 2 to 10 percent

*Classification:* Clayey, kaolinitic, thermic Typic Kanhapludults

### Typical Pedon

Pacolet clay loam, 2 to 6 percent slopes, eroded; about 0.1 mile west of the junction of Secondary Road 1319 and Secondary Road 1318, about 50 feet south on a

farm road, and 25 feet east of the road (State plane coordinates 1,820,300 feet E., 710,500 feet N.):

- Ap**—0 to 4 inches; yellowish red (5YR 5/8) clay loam; weak medium subangular blocky structure; firm; slightly plastic and slightly sticky; few fine, medium, and coarse roots; few fine pores; strongly acid; clear wavy boundary.
- Bt1**—4 to 20 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; moderately plastic and slightly sticky; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- Bt2**—20 to 25 inches; red (2.5YR 4/8) clay; weak medium subangular blocky structure; friable; slightly plastic and slightly sticky; few fine roots; few fine pores; common distinct clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual wavy boundary.
- C1**—25 to 45 inches; red (2.5YR 4/8) loam saprolite; massive; friable; slightly plastic and slightly sticky; few fine flakes of mica; few weathered white (10YR 8/1) rock fragments; very strongly acid; gradual wavy boundary.
- C2**—45 to 60 inches; red, strong brown, brownish yellow, and white loam saprolite; massive with relict rock structure; firm; many fine flakes of mica; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid to slightly acid in the A horizon, except where the surface layer has been limed, and very strongly acid to moderately acid in the B and C horizons

*Content of rock fragments:* 0 to 10 percent throughout the profile

*Ap or A horizon:*

Hue—5YR or 7.5YR

Value—4 or 5

Chroma—5 to 8

Texture—clay loam

*Bt horizon:*

Hue—10R or 2.5YR

Value—4 or 5

Chroma—5 to 8

Mottles—shades of yellow or brown

Texture—clay, sandy clay, or clay loam

*BC horizon (if it occurs):*

Hue—10R to 5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of yellow or brown

Texture—clay, sandy clay loam, or clay loam

*C horizon:*

Color—multicolored in shades of red, brown, yellow, or white in some pedons and hue of 10R to 5YR, value of 4 or 5, and chroma of 6 to 8 in other pedons

Texture—sandy clay loam, clay loam, or loam saprolite

## Rion Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Upland side slopes

*Parent material:* Material weathered from felsic crystalline rocks

*Slope range:* 25 to 40 percent

*Classification:* Fine-loamy, mixed, thermic Typic Hapludults

### Typical Pedon

Rion sandy loam, 25 to 40 percent slopes; about 10.5 miles southwest of Roxboro, 0.6 mile north of Hester's Store on Secondary Road 1102, about 1.3 miles northeast on Secondary Road 1176, about 0.3 mile northwest on a farm road, and 150 feet northeast of the road (State plane coordinates 1,963,000 feet E., 949,400 feet N.):

**Oi**—1 inch to 0; partly decomposed leaf litter.

**A**—0 to 3 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; common fine and medium roots; common fine pores; few quartz pebbles; strongly acid; abrupt smooth boundary.

**E**—3 to 6 inches; light yellowish brown (2.5Y 6/4) sandy loam; weak fine granular structure; few fine and medium roots; few fine and common medium pores; few quartz pebbles; strongly acid; clear wavy boundary.

**Bt**—6 to 27 inches; brownish yellow (10YR 6/6) loam; weak fine medium subangular blocky structure; friable; few fine, medium, and coarse roots; few fine and medium pores; few faint clay films on faces of peds and in pores; 10 percent quartz gravel; very strongly acid; gradual wavy boundary.

**BC**—27 to 34 inches; brownish yellow (10YR 6/6) sandy loam; few medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine and medium pores; common fine flakes of mica; 10 percent quartz gravel; very strongly acid; gradual wavy boundary.

C—34 to 61 inches; brownish yellow, strong brown, and yellowish brown sandy loam saprolite; massive with weak relict rock structure; friable; very strongly acid.  
Cr—61 to 65 inches; weathered felsic crystalline rock.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches  
*Depth to bedrock:* More than 60 inches  
*Reaction:* Very strongly acid to slightly acid throughout the profile, except where the surface layer has been limed  
*Content of rock fragments:* 0 to 10 percent throughout the profile

**A or Ap horizon:**  
Hue—5YR to 2.5Y  
Value—4 to 6  
Chroma—2 to 6  
Texture—sandy loam

**E horizon:**  
Hue—5YR to 2.5Y  
Value—4 to 6  
Chroma—3 to 8  
Texture—sandy loam

**Bt horizon:**  
Hue—5YR to 10YR  
Value—4 to 6  
Chroma—4 to 8  
Mottles—shades of red, yellow, or brown  
Texture—commonly loam or sandy loam but ranges to sandy clay loam or clay loam

**BC horizon:**  
Hue—2.5YR to 10YR  
Value—4 to 6  
Chroma—4 to 8  
Mottles—shades of red, yellow, brown, gray, or white  
Texture—loam, sandy loam, sandy clay loam, or clay loam

**C horizon:**  
Color—multicolored in shades of red, brown, yellow, or white in some pedons and hue of 2.5YR, value of 4 to 6, and chroma of 4 to 8 in other pedons  
Mottles—shades of red, yellow, brown, gray, or white  
Texture—sandy loam or sandy clay loam saprolite

**Cr horizon:**  
Weathered felsic crystalline rocks

The Rion soils in Person County are taxadjuncts because they have slightly less clay in the particle-size control section than allowed by the Rion series. This difference does not affect use, management, or interpretations of the soils.

## Sedgefield Series

*Depth class:* Very deep  
*Drainage class:* Moderately well drained or somewhat poorly drained  
*Permeability:* Slow  
*Landscape position:* Upland ridges and low areas at the head of drainageways  
*Parent material:* Material weathered from felsic and mafic crystalline rocks  
*Slope range:* 2 to 6 percent  
*Classification:* Fine, mixed, thermic Aquultic Hapludalfs

### Typical Pedon

Sedgefield sandy loam, in an area of Helena-Sedgefield sandy loams, 2 to 6 percent slopes; about 0.9 mile south of Roseville on North Carolina Highway 49, about 2.0 miles southeast on Secondary Road 1141, and 100 feet east of the road, in a field (State plane coordinates 1,992,600 feet E., 940,400 feet N.):

Ap—0 to 8 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; many fine and medium roots; common fine pores; strongly acid; abrupt smooth boundary.

Bt1—8 to 17 inches; yellowish brown (10YR 5/6) clay; few fine prominent red (2.5YR 5/8) and strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; common fine and medium roots; moderately plastic and very sticky; few very fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—17 to 25 inches; brownish yellow (10YR 6/8) clay; many medium distinct light gray (10YR 7/2), common medium distinct strong brown (7.5YR 5/8), and few fine prominent red (2.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; moderately plastic and very sticky; few fine pores; common distinct clay films on faces of peds; common white (10YR 8/1) streaks of feldspar; very strongly acid; gradual wavy boundary.

Bt3—25 to 34 inches; brownish yellow (10YR 6/6) clay loam; many medium distinct light gray (10YR 7/2), common medium distinct strong brown (7.5YR 5/8), few medium prominent white (10YR 8/1), and few medium distinct light reddish brown (2.5YR 6/4) mottles; weak medium subangular blocky structure; firm; slightly plastic and slightly sticky; few fine pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Cg1—34 to 44 inches; mottled light gray (10YR 7/1), light reddish brown (2.5YR 6/4), strong brown (7.5YR 5/8), and brownish yellow (10YR 6/6) sandy clay loam; massive; friable; slightly plastic and

slightly sticky; few fine pores; moderately acid; gradual wavy boundary.

Cg2—44 to 54 inches; light gray (10YR 7/2) sandy clay loam; common medium prominent strong brown (7.5YR 5/8) and common medium distinct white (10YR 8/1) mottles; massive; friable; slightly plastic and slightly sticky; moderately acid; gradual wavy boundary.

C—54 to 72 inches; strong brown, light gray, white, and pale yellow sandy clay loam saprolite that has pockets of clay loam and clay; massive; friable; slightly plastic and slightly sticky; slightly acid.

#### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid to slightly acid in the A and B horizons, except where the surface layer has been limed, and moderately acid to moderately alkaline in the C horizon

*Content of rock fragments:* 0 to 15 percent in the surface layer

*Ap or A horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 3

Texture—sandy loam

*BE or BA horizon (if it occurs):*

Hue—10YR to 5Y

Value—5 to 7

Chroma—3 to 8

Texture—sandy clay loam or sandy loam

*Bt horizon:*

Hue—7.5YR to 5Y

Value—5 or 6

Chroma—3 to 8

Mottles—shades of red, yellow, gray, white, or brown

Texture—clay loam, sandy clay, or clay

*Cg horizon:*

Color—mottled in shades of red, brown, yellow, white, or gray in some pedons and hue of 5YR to 5Y, value of 5 to 8, and chroma of 1 to 8 in other pedons

Mottles—shades of red, yellow, brown, white, or gray

Texture—sandy clay loam, loam, or sandy loam

*C horizon:*

Color—multicolored in shades of red, brown, yellow, white, or gray

Texture—sandy clay loam, loam, or sandy loam saprolite that has pockets of clay loam or clay

### Tatum Series

*Depth class:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Upland side slopes

*Parent material:* Material weathered from fine grained felsic metamorphic rocks

*Slope range:* 10 to 35 percent

*Classification:* Clayey, mixed, thermic Typic Hapludults

#### Typical Pedon

Tatum loam, 15 to 35 percent slopes; about 4.3 miles east of Roxboro on Secondary Road 1536, about 0.3 mile south on Secondary Road 1552, and 150 feet east of the road, in a wooded area (State plane coordinates 2,029,200 feet E., 960,600 feet N.):

Oi—1 inch to 0; partly decomposed leaves, twigs, and needles.

A—0 to 2 inches; brown (7.5YR 4/2) loam; moderate medium granular structure; very friable; common fine and medium roots; few fine pores; 10 percent rock fragments; strongly acid; clear wavy boundary.

AB—2 to 6 inches; dark grayish brown (10YR 4/2) loam; weak fine subangular blocky structure; friable; slightly plastic and slightly sticky; many fine and medium roots; few fine pores; 5 percent rock fragments; very strongly acid; clear wavy boundary.

Bt1—6 to 9 inches; red (2.5YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable; slightly plastic and slightly sticky; many fine and medium roots; few fine pores; common distinct clay films on faces of peds; 5 percent rock fragments; very strongly acid; gradual wavy boundary.

Bt2—9 to 22 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; friable; moderately plastic and slightly sticky; few fine pores; common fine, medium, and coarse roots; few distinct clay films on faces of peds; 5 percent rock fragments; very strongly acid; gradual wavy boundary.

Bt3—22 to 41 inches; red (2.5YR 4/6) clay loam; common medium prominent brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable; slightly plastic and slightly sticky; few distinct clay films on faces of peds; 5 percent soft bedrock fragments; very strongly acid; gradual irregular boundary.

Cr—41 to 61 inches; soft slate and gneiss bedrock that can be dug with difficulty by hand tools; multicolored silt loam in cracks that are 5 to 15 inches apart; very strongly acid.

**Range in Characteristics**

*Thickness of the solum:* 30 to more than 60 inches

*Depth to bedrock:* 40 to 60 inches to soft bedrock

*Reaction:* Very strongly acid or strongly acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* 0 to 15 percent throughout the profile

*A or Ap horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam

*AB or BA horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam, sandy loam, or fine sandy loam

*BE horizon (if it occurs):*

Hue—2.5YR to 10YR

Value—4 to 6

Chroma—3 to 8

Texture—loam or silty clay loam

*Bt horizon:*

Hue—10R or 2.5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of yellow, brown, or red

Texture—clay, silty clay, clay loam, or silty clay loam

*BC horizon (if it occurs):*

Hue—2.5YR to 7.5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of yellow, brown, or red

Texture—clay loam or silty clay loam

*C horizon (if it occurs):*

Hue—10R to 5YR

Value—4 to 6

Chroma—4 to 8

Mottles—shades of yellow, brown, or red

Texture—silt loam, clay loam, or silty clay loam

*Cr horizon:*

Soft, fractured, fine grained felsic metamorphic rocks that can be dug with difficulty by hand tools

**Udorthents**

*Depth class:* Moderately deep to very deep

*Drainage class:* Well drained or moderately well drained

*Permeability:* Moderate to slow

*Landscape position:* Upland ridges and side slopes commonly adjacent to urban areas

*Parent material:* Commonly cut and fill material from loamy and clayey upland soils

*Slope range:* 2 to 6 percent

*Classification:* Udorthents

**Range in Characteristics**

*Depth to bedrock:* 0 inches in areas where all of the natural soil has been completely excavated; in fill areas, 30 to 60 inches of soil material over the natural soil or bedrock

*Reaction:* Very strongly acid to slightly alkaline

*Content of rock fragments:* 0 to 50 percent throughout the profile

**Vance Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Landscape position:* Upland ridges, knolls, and side slopes

*Parent material:* Material weathered from felsic crystalline rocks

*Slope range:* 2 to 10 percent

*Classification:* Clayey, mixed, thermic Typic Hapludults

**Typical Pedon**

Vance sandy loam, 2 to 6 percent slopes; about 1.8 miles south of Roseville on North Carolina Highway 49, about 0.1 mile east on a farm road, and 50 feet south of the road (State plane coordinates 1,981,300 feet E., 939,400 feet N.):

Ap—0 to 5 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; friable; few fine and medium roots; few fine pores; 5 percent rock fragments; slightly acid; abrupt smooth boundary.

Bt1—5 to 10 inches; yellowish brown (10YR 5/4) clay loam; few medium distinct brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; very firm; moderately plastic and moderately sticky; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; 5 percent rock fragments; very strongly acid; clear wavy boundary.

Bt2—10 to 28 inches; yellowish brown (10YR 5/8) clay; common coarse faint brownish yellow (10YR 6/8) and few coarse prominent yellowish red (5YR 5/8) mottles; weak medium prismatic structure parting to moderate medium angular blocky; very firm; moderately plastic and slightly sticky; few fine roots; few fine pores; many distinct clay films on faces of



- peds; very strongly acid; gradual wavy boundary.
- BC—28 to 35 inches; mixed yellowish red (5YR 5/8), yellow (10YR 7/8), yellowish brown (10YR 5/8), and white (10YR 8/1) clay loam; weak coarse subangular blocky structure; friable; moderately plastic and slightly sticky; few fine and medium pores; very strongly acid; gradual wavy boundary.
- C—35 to 60 inches; yellowish red, reddish yellow, and white loam saprolite; massive; friable; very strongly acid.

### Range in Characteristics

- Thickness of the solum:* 24 to 40 inches
- Depth to bedrock:* More than 60 inches
- Reaction:* Very strongly acid to moderately acid in the A horizon, except where the surface layer has been limed, and very strongly acid or strongly acid in the B and C horizons
- Content of rock fragments:* 0 to 10 percent throughout the profile
- Ap or A horizon:*  
 Hue—10YR or 2.5Y  
 Value—4 or 5  
 Chroma—2 to 4  
 Texture—sandy loam
- E horizon (if it occurs):*  
 Hue—10YR or 2.5Y  
 Value—5 to 7  
 Chroma—4 to 6  
 Texture—sandy loam
- BE or BA horizon (if it occurs):*  
 Hue—5YR to 10YR  
 Value—4 or 5  
 Chroma—4 to 8  
 Texture—clay loam or sandy clay loam
- Bt horizon:*  
 Hue—5YR to 10YR  
 Value—4 or 5  
 Chroma—4 to 8  
 Mottles—shades of red, yellow, or brown  
 Texture—clay, sandy clay loam, or clay loam
- BC horizon:*  
 Color—mixed in shades of red, yellow, brown, or white in some pedons and hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8 in other pedons  
 Mottles—shades of red, yellow, or brown  
 Texture—clay loam, clay, sandy clay loam, or sandy clay
- C horizon:*  
 Color—multicolored in shades of red, brown, yellow, white, or gray

Texture—loam, sandy loam, clay loam, or sandy clay loam saprolite

### Wedowee Series

- Depth class:* Very deep
- Drainage class:* Well drained
- Permeability:* Moderate
- Landscape position:* Upland ridges, knolls, and side slopes
- Parent material:* Material weathered from felsic crystalline rocks
- Slope range:* 2 to 25 percent
- Classification:* Clayey, kaolinitic, thermic Typic Kanhapludults

### Typical Pedon

- Wedowee sandy loam, 10 to 15 percent slopes; about 4.6 miles west of Roxboro and 0.3 mile northwest of Olive Hill on North Carolina Highway 57, about 0.8 mile west on Secondary Road 1309, about 0.5 mile south on Secondary Road 1305, and 100 feet east of the road, in a field (State plane coordinates 1,981,000 feet E., 972,900 feet N.):
- Ap—0 to 5 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; few fine and medium roots; few fine pores; 5 percent rock fragments; slightly acid; clear wavy boundary.
- BE—5 to 7 inches; yellowish brown (10YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable; few fine and medium roots; few fine and medium pores; 5 percent rock fragments; strongly acid; clear wavy boundary.
- Bt—7 to 17 inches; yellowish red (5YR 5/8) clay; common medium faint strong brown (7.5YR 5/8) and brownish yellow (10YR 6/8) and few fine distinct red (2.5YR 4/8) mottles; weak medium subangular blocky structure; friable; slightly plastic and slightly sticky; few fine and medium roots; few fine and medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- BC—17 to 25 inches; yellowish red (5YR 5/8) sandy clay loam that has a few pockets of sandy loam saprolite; common medium distinct strong brown (7.5YR 5/6) and yellow (10YR 7/8) mottles; weak coarse subangular blocky structure; friable; slightly plastic and slightly sticky; few fine roots; few fine pores; very strongly acid; gradual wavy boundary.
- C1—25 to 55 inches; yellowish red, strong brown, yellow, and white sandy loam saprolite that has a few pockets of sandy clay loam; massive; friable; very strongly acid; gradual wavy boundary.
- C2—55 to 65 inches; pink, white, and reddish yellow

sandy loam saprolite; massive with weak relict rock structure; friable; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid or strongly acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* 0 to 10 percent throughout the profile, except for areas of map unit WfC, where 3 to 15 percent of the surface is covered by boulders and stones

*Ap or A horizon:*

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 4

Texture—sandy loam

*E horizon (if it occurs):*

Hue—7.5YR to 2.5Y

Value—4 to 7

Chroma—3 to 6

Texture—sandy loam, fine sandy loam, or loam

*BE or BA horizon:*

Hue—5YR to 10YR

Value—5 to 7

Chroma—3 to 6

Texture—loam or sandy clay loam

*Bt horizon:*

Hue—5YR to 10YR

Value—5 or 6

Chroma—6 to 8

Mottles—shades of red, yellow, or brown

Texture—clay, sandy clay, sandy clay loam, or clay loam

*BC horizon:*

Color—multicolored in shades of red, brown, yellow, or white in some pedons and hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8 in other pedons

Mottles—shades of red, yellow, or brown

Texture—sandy clay loam, sandy clay, clay loam, or clay

*C horizon:*

Color—multicolored in shades of red, brown, yellow, white, pink, or gray

Texture—loam, sandy loam, clay loam, or sandy clay loam saprolite

### Wehadkee Series

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Permeability:* Moderate

*Landscape position:* Flood plains

*Parent material:* Alluvium derived from weathered mixed igneous and metamorphic rocks

*Slope range:* 0 to 2 percent

*Classification:* Fine-loamy, mixed, nonacid, thermic Typic Fluvaquents

### Typical Pedon

Wehadkee loam, in an area of Chewacla and Wehadkee loams, frequently flooded; about 10.5 miles southwest of Roxboro, 1.8 miles north of Hester's Store on Secondary Road 1102, about 0.2 mile northeast on a farm road, and 600 feet north of the road (State plane coordinates 1,959,600 feet E., 947,400 feet N.):

A—0 to 3 inches; dark grayish brown (10YR 4/2) loam; weak coarse granular structure; friable; common fine and few medium roots; common fine and few medium pores; few fine flakes of mica; slightly acid; smooth wavy boundary.

Bg1—3 to 10 inches; gray (10YR 5/1) sandy clay loam; few fine prominent strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable; common fine and medium roots; common fine and few medium pores; few fine flakes of mica; moderately acid; gradual wavy boundary.

Bg2—10 to 34 inches; light gray (10YR 6/1) loam; many medium distinct very dark grayish brown (10YR 3/2) and common fine distinct brown (7.5YR 5/4) mottles; weak medium subangular blocky structure; friable; moderately plastic and slightly sticky; common fine and few medium roots; few fine and medium pores; few fine flakes of mica; slightly acid; gradual wavy boundary.

Cg—34 to 60 inches; light gray (10YR 6/1) loam; common medium faint grayish brown (2.5Y 5/2), gray (N 5/0), and yellowish brown (10YR 5/8) mottles; massive; friable; common fine flakes of mica; slightly acid.

### Range in Characteristics

*Thickness of the solum:* 20 to more than 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Strongly acid to neutral throughout the profile

*Content of rock fragments:* None or few

*A horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 3

Texture—loam

*Bg horizon:*

Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2 in some pedons or neutral in hue and value of 4 to 6 in other pedons

Mottles—shades of brown, yellow, or red  
 Texture—loam, sandy clay loam, silty clay loam, silt, or clay loam

*Cg horizon:*

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2 in some pedons or neutral in hue and value of 4 to 7 in other pedons

Mottles—shades of brown, yellow, gray, or red  
 Texture—sandy loam, loam, or stratified layers of sand and gravel below a depth of 40 inches

The Wehadkee soils in Person County are taxadjuncts because they have slightly less clay in the particle-size control section than allowed by the Wehadkee series. This difference does not affect use, management, or interpretations of the soils.

## **Wickham Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landscape position:* Stream terraces

*Parent material:* Old alluvium derived from soils weathered from felsic crystalline rocks

*Slope range:* 2 to 6 percent

*Classification:* Fine-loamy, mixed, thermic Typic Hapludults

### **Typical Pedon**

Wickham sandy loam, 2 to 6 percent slopes, rarely flooded; about 9.5 miles southeast of Roxboro and 2.0 miles south of Mt. Tirzah on Secondary Road 1737, about 0.7 mile west on Secondary Road 1738, about 0.3 mile north on a farm road and then 0.3 mile south on the road, and 500 feet southeast of the road, in a field (State plane coordinates 2,022,800 feet E., 908,300 feet N.):

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate medium granular structure; friable; common fine and few medium roots; common fine pores; few fine flakes of mica; moderately acid; abrupt smooth boundary.

BE—8 to 12 inches; strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; slightly plastic and slightly sticky; few fine roots; few medium pores; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt—12 to 48 inches; yellowish red (5YR 4/6) sandy clay loam; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; slightly plastic and slightly sticky; few fine, medium, and coarse roots; few fine pores;

few faint clay films on faces of peds and in pores; few fine flakes of mica; very strongly acid; gradual wavy boundary.

BC—48 to 60 inches; yellowish red (5YR 5/8) sandy loam that has pockets of sandy clay loam; few fine faint yellowish red (5YR 4/6) and few medium prominent very pale brown (10YR 8/4) mottles; weak medium subangular blocky structure; friable; few fine flakes of mica; very strongly acid; gradual wavy boundary.

C—60 to 65 inches; yellowish red (5YR 5/8) loamy sand; single grain; loose; few fine flakes of mica; very strongly acid.

### **Range in Characteristics**

*Thickness of the solum:* 36 to more than 60 inches

*Depth to bedrock:* More than 60 inches

*Reaction:* Very strongly acid to moderately acid throughout the profile, except where the surface layer has been limed

*Content of rock fragments:* None

*Ap or A horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—2 to 4

Texture—sandy loam

*BE or BA horizon:*

Hue—5YR or 7.5YR

Value—4 to 6

Chroma—4 to 8

Texture—sandy clay loam, sandy loam, or loam

*Bt horizon:*

Hue—2.5YR to 7.5YR

Value—4 to 6

Chroma—4 to 8

Mottles—shades of red, yellow, or brown

Texture—sandy clay loam, clay loam, loam, or clay

*BC horizon:*

Hue—5YR or 7.5YR

Value—4 to 6

Chroma—6 to 8

Mottles—shades of red, yellow, brown, gray, or white

Texture—loam, sandy loam, sandy clay loam, or clay loam

*C horizon:*

Hue—5YR to 10YR

Value—5 or 6

Chroma—3 to 8

Mottles—shades of red, yellow, or brown

Texture—loamy sand, sandy loam, loam, sandy clay loam, or clay loam

## **Wilkes Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Landscape position:* Upland ridges and side slopes

*Parent material:* Material weathered from mafic crystalline rocks

*Slope range:* 2 to 45 percent

*Classification:* Loamy, mixed, thermic, shallow Typic Hapludalfs

### **Typical Pedon**

Wilkes loam, 2 to 8 percent slopes; about 6.5 miles northwest of Roxboro and 1.3 miles north of Ceppo on Secondary Road 1336, about 800 feet southeast on Old Rock Quarry Road, and 25 feet south of the road, in a field at the edge of the woods (State plane coordinates 1,976,200 feet E., 990,200 feet N.):

Ap—0 to 4 inches; brown (10YR 5/3) loam; weak medium granular structure; friable; few fine and medium roots; few fine pores; moderately acid; abrupt smooth boundary.

Bt—4 to 10 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; firm; slightly plastic and slightly sticky; few fine roots; few fine and medium pores; few distinct clay films on faces of peds; slightly acid; clear wavy boundary.

Bt/C—10 to 15 inches; 80 percent (Bt) yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; firm; few distinct clay films on faces of peds; common fine and medium pores; slightly plastic and slightly sticky; 20 percent (C) mixed brownish yellow (10YR 6/8), reddish yellow (5YR 6/8), and dark greenish gray (5GY 4/1) sandy loam saprolite; massive; slightly acid; gradual wavy boundary.

Cr—15 to 41 inches; soft, multicolored, fractured

hornblende schist and gneiss that can be dug by hand tools; fine sandy loam in cracks that are 8 to 10 inches apart; strongly acid; abrupt smooth boundary.

R—41 inches; hard, fractured mafic crystalline rock, mostly hornblende schist.

### **Range in Characteristics**

*Thickness of the solum:* 10 to 20 inches

*Depth to bedrock:* 10 to 20 inches to soft bedrock and 40 to 60 inches to hard bedrock

*Reaction:* Strongly acid to slightly acid in the A horizon, except where the surface layer has been limed, and slightly acid to slightly alkaline in the B and C horizons

*Content of rock fragments:* 0 to 15 percent throughout the profile

*Ap or A horizon:*

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 4

Texture—loam

*Bt horizon:*

Hue—5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Texture—clay loam, sandy clay loam, or loam

*C horizon:*

Color—multicolored in shades of black, green, brown, yellow, or gray

Texture—sandy loam, clay loam, sandy clay loam, or loam saprolite

*Cr horizon:*

Soft, fractured mafic crystalline rocks that can be dug by hand tools

*R horizon:*

Hard, fractured mafic crystalline rock

# Formation of the Soils

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This section describes the factors of soil formation and relates them to the soils in Person County.

## Factors of Soil Formation

Soil is the product of soil-forming processes acting on materials altered or deposited by geologic forces. The factors that contribute to the differences among soils are climate, organisms, parent material, relief, and time. Climate and organisms, particularly vegetation, are the active forces in soil formation. Their effect on parent material is modified by topography and by the length of time the parent material has been in place. The relative importance of each factor differs from place to place. In some places one factor dominates in the formation of a soil and determines most of its properties, but normally the interaction of all factors determines the kind of soil that develops in any given place (4).

## Parent Material

Parent material is the unconsolidated rock or saprolite from which a soil forms. It is primarily responsible for the chemical and mineral composition of the soil. It is the most important factor of the differences among the soils in Person County. Some of the differences, such as texture, color, or depth, are easily determined by observation. Differences in mineral composition are determined by laboratory analysis.

The county is in the Southern Piedmont physiographic region. Most of the soils in the county formed in residual material, which is the material weathered from the underlying rocks.

The two principal rock groups that underlie the county are igneous and metamorphic. Granite and diorite are common rocks in the igneous group. These rocks are commonly referred to as felsic (acid) and mafic (basic) crystalline or intrusive rocks. Slate, schist, and gneiss are classified as metamorphic rocks.

The western part of the county is dominantly underlain by igneous rock. Appling, Cecil, Pacolet, Rion, Vance, and Wedowee soils formed in material weathered from felsic crystalline rocks. Helena soils

formed in material weathered from mixed felsic and mafic crystalline rocks. Enon and Sedgefield soils formed in material weathered from mafic or mixed felsic to mafic rocks. Mecklenburg, Orange, and Wilkes soils formed in material weathered from mafic crystalline rocks.

The eastern part of the county is dominantly underlain by metamorphic rocks. Georgeville, Goldston, Herndon, Lignum, and Tatum soils formed in material weathered from slates, gneiss, and schist.

A small area in the northwestern part of the county is underlain by schist and gneiss. Pacolet and Wedowee soils formed in material weathered from these rocks.

In the western half of the county, where felsic crystalline rocks are intermingled with mafic gneiss and schist and diabase rocks, the pattern in relation to the landscape is very complex. The changes in the various parent materials can occur within a few feet, from ridge to ridge, or on side slopes dissected by drainageways. On some landscapes, felsic crystalline rocks dominate the ridgetops and the more weatherable mafic gneiss and schist are on the side slopes adjacent to drainageways. A common pattern is Helena soils on ridges and Wilkes soils on the more sloping side slopes.

Wickham soils formed in old alluvium on stream terraces. Chewacla and Wehadkee soils formed in more recent alluvium on flood plains.

The characteristics of the parent material are passed on to the soils. The texture of the soil depends on the percentage of sand, silt, and clay in the parent material. Most of the soils in the county are clayey. Examples of such soils are Georgeville, Appling, and Helena soils. Their parent material contains a relatively high amount of minerals that have weathered to clay. Soils that formed from fine grained, felsic metamorphic slates, such as Georgeville, Herndon, and Lignum soils, have more silt than Rion and Wedowee soils. In contrast, Rion and Wedowee soils formed from granitic rock that is relatively high in content of sand, low in content of silt, and moderate to high in clay forming minerals.

The mineralogy of the soils is also inherited from the parent material. The subsoil of most of the soils that formed from felsic igneous and metamorphic rocks,

such as Appling, Georgeville, Wedowee, and Herndon soils, is mainly kaolinite clay. Soils that formed from diorite, gabbro, or diabase rocks are much higher in content of montmorillonite and vermiculite clays. These types of clays give such soils as Orange and Enon soils a high shrink-swell potential.

The parent material of the alluvial soils descended from the soils on uplands. Some of the eroded material from the uplands was deposited in drainageways, while part of the sediments moved with the water and settled downstream. Chewacla and Wehadkee soils on flood plains and Wickham soils on terraces formed in material that washed mostly from the acid soils on the Piedmont uplands. Some of the soils on flood plains in the Piedmont are nonacid because their parent material derived from soils formed from basic crystalline rocks.

### Relief

The relief, or topography, affects formation of the soils by causing differences in free drainage, surface runoff, soil temperature, and the extent of geologic erosion. In Person County, the relief is largely determined by the kind of underlying bedrock, by the geology of the area, by the amount of landscape dissection by streams, and by retreat of the slopes. The county is on a moderate plateau that ranges in elevation from 350 to 890 feet above sea level.

The percolation of water is affected by relief. Because it aids chemical reactions and is necessary for leaching, the percolation of water is important in soil development. Leaching is reflected by the low amount of bases and high acidity in most of the soils in the county.

The soils of the county are on slopes ranging from 0 to 45 percent. The soils on the uplands that have slopes of less than 10 percent generally have profiles that are deeper and better defined than those on the steeper slopes. Examples of well developed soils include Cecil, Appling, and Vance soils. Relief is also important in soil formation because it may affect the depth of soils. Geologic erosion removes soil material almost as fast as it forms on some soils in the county that have slopes of 15 percent. As a result, most of the strongly sloping to steep soils have a thinner solum than that of the less sloping soils. Wilkes and Goldston soils are in these areas and are not so deep nor so well developed as the less sloping soils.

The drainage of a sequence of soils that developed from similar parent material can also be affected by relief. The drainage may be affected by a high water table, which generally is related to nearly level relief. For example, Appling soils are well drained, Helena soils are moderately well drained, and Orange soils are somewhat poorly drained. These soils formed in similar

parent material but have different characteristics because of their topographic position and internal drainage.

In the county, the term "landscape position" instead of "relief" is used as a factor in soil formation. On many landscapes in the county, the only factor of soil formation that changes is position. The major positions on uplands are convex ridgetops and sloping to steep convex side slopes and concave depressions at the head of and along intermittent drainageways. The landscape becomes more dissected from the ridgetops to the geologically erodible side slopes.

The position of the soil on the landscape determines its drainage. The concave positions at the head of intermittent drainageways are somewhat poorly drained or moderately well drained. The convex ridgetops and steep side slopes generally are well drained.

Drainage influences the development of profiles. The well drained Appling soils present a striking contrast. A brown, washed out A horizon is underlain by a yellowish brown to strong brown, clay-enriched B horizon. The moderately well drained Helena soils have less of a contrast because the A horizon is grayish brown and the clayey B horizon is mottled with gray.

Most of the landscapes in the county are sloping. The drainageways have entrenched the uplands to the extent that about 70 percent of the soils are well drained. The clayey subsoil of the well drained Tatum and Wedowee soils on the geologically eroding side slopes is not as thick as that of the Georgeville and Appling soils on the more stable ridgetops.

### Climate

Person County has humid summers that are long and hot and winters that are short and mild. Rainfall is distributed fairly evenly throughout the year.

During November through April, the rate of precipitation exceeds the rate of evapotranspiration. Rainfall either runs off the surface or soaks into the ground. Percolating water leaches nutrients and other soluble compounds, and, at a slower rate, clay and less soluble colloids. During May through October, the rate of evapotranspiration exceeds the rate of precipitation. Water from summer showers generally moistens only the top few inches of the soil. As a result, colloidal clay moves only a short distance. In most areas of the county, the combined effect of rainfall and evapotranspiration has produced a clay-enriched subsoil below a loamy topsoil.

Heat and moisture favor chemical and biological activity. Plant debris decomposes rapidly and thoroughly in a warm, humid climate. The well drained soils in the county contain less than 1 percent organic matter.

## Organisms

The role of organisms is probably the least understood of the five factors of soil formation. Yet plants and animals play a very active role in soil development.

Organisms transfer soil material from beneath the surface to above ground. When a tree falls, soil clinging to the roots is pulled up to the surface. Anthills and crawfish mounds generally contain material from the subsoil. Animals and plants blend soil ingredients into a uniform mixture. Roots break up pockets of sand and clay. Worms cleave some particles and squeeze others. The mixing of soil material by living organisms increases the rate of chemical reactions in the soil, removes products, and recharges the chemical activity of particle surfaces.

Organisms contribute to the chemical environment within the soil profile. Old roots leave channels for air and water. Living roots absorb water and nutrients from the entire rooting depth and deposit them on the surface as the plants die and decay. Once the trees are cleared for the soil to be used as cropland, the nutrients released by the decaying debris are available to crops. In a few years, however, this supply of nutrients has been exhausted from the soil as crops are harvested and carried to market. These nutrients are no longer present except in areas of prescribed cut and burned forests, and fertilizer must be added to grow crops in these soils.

As organisms affect the chemical environment, they influence soil color. The well drained soils are yellow and red, and the poorly drained soils are mottled in gray. The iron compounds coating the mineral grains are yellow and red. The minerals themselves are colorless. When the soil is saturated and roots and micro-organisms use oxygen faster than it can be replenished, ground water dissolves the iron pigments. When the iron stains have been washed off, the mineral grains appear gray. As a result, gray mottles form at the depth of the seasonal high water table.

## Time

Time is important in the formation of the soils. If the factors of soil formation have operated long enough to form well defined, genetically related horizons and the soil material is in equilibrium with its environment, the soil is considered mature. An immature soil, however, shows little or no horizonation. The maturity of many of

the soils ranges between these extremes.

Soils that formed in the same kind of parent material but in areas of different topography do not necessarily mature in the same length of time. For example, definite horizons have not developed in the soils on the steep slopes because the soil material is being removed by erosion almost as rapidly as it forms. On the soils in the less strongly sloping areas, more development of horizons has taken place.

The soils that formed in material that is resistant to weathering require more time to mature than the soils that formed in easily weathered material. The development of genetically related horizons in the soils on flood plains may be slowed or prevented if alluvium is deposited frequently.

Appling soils are mature soils in which the horizons are well defined and genetically related and the rate of weathering has exceeded that of geologic erosion; the soils generally are in equilibrium with their environment. Goldston soils are only partly mature because they are in the sloping areas, in which the rate of erosion is nearly equal to the rate of weathering. Chewacla soils on flood plains are immature because they formed in recently deposited material that is constantly being renewed.

The soils in Person County are some of the oldest soils on earth. The gently sloping Cecil and Appling soils are probably tens of thousands of years old. The steep Wedowee and Rion soils are not quite as ancient but are still very old.

Most of the soils in the county have well developed, genetically related horizons. The gently sloping soils on uplands, such as Appling and Georgeville soils, have thick, well developed profiles. A young soil on terraces, such as Wickham soils, also has a well developed profile, but it is not as thick as that of the gently sloping soils on uplands because this soil is underlain by inert sand or gravel. Chewacla and Wehadkee soils on flood plains are younger than the soils on uplands and terraces and do not have a well developed profile. The A and B horizons of the soils on uplands and terraces are similar, even though the ages of the landscapes are different. This indicates that the development of the soils in the county has reached an equilibrium with the environment. It also shows that the formation of thick soil horizons in a warm, humid climate occurs at a faster rate than many other geological processes.





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# Glossary

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**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Area reclaim** (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Atterberg limits.** Atterberg limits are measured for soil materials passing the No. 40 sieve. They include the liquid limit (LL), which is the moisture content at which the soil passes from a plastic to a liquid state, and the plastic index (PI), which is the water content corresponding to an arbitrary limit between the plastic and semisolid states of consistency of a soil.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low .....	0 to 3
Low .....	3 to 6
Moderate .....	6 to 9
High .....	9 to 12
Very high .....	more than 12

**Base saturation.** The degree to which material having cation-exchange properties is saturated with

exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

**Basic rock.** An igneous rock composed dominantly of dark minerals. The minerals of this rock are comparatively low in silica and rich in bases, such as the amphiboles, the pyroxenes, biotite, and olivine.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bottom land.** The normal flood plain of a stream, subject to flooding.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

**Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

**Channery soil material.** Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a chanter.

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clayey.** A general textural term that includes sandy clay, silty clay, and clay. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) containing 35 percent or more clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**CMAI (cumulative mean annual increment).** The age or rotation at which growing stock of a forest produces the greatest annual growth (for that time period). It is the age at which periodic annual growth and mean annual growth are equal.

**Coarse fragments.** If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

**Coarse textured soil.** Sand or loamy sand.

**Cobblestone (or cobble).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Colluvium.** Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

**Complex, soil.** A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

**Concretions.** Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

**Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

**Consistence, soil.** The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

*Loose.*—Noncoherent when dry or moist; does not hold together in a mass.

*Friable.*—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

*Firm.*—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

*Plastic.*—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

*Sticky.*—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

*Hard.*—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

*Soft.*—When dry, breaks into powder or individual grains under very slight pressure.

*Cemented.*—Hard; little affected by moistening.

**Contour stripcropping.** Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Crop residue management.** Use of that portion of the plant or crop left in the field after harvest for protection or improvement of the soil.

**Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.

**Dbh (diameter at breast height).** The diameter of a tree at 4.5 feet above the ground level on the uphill side.

**Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period.

**Depth to rock** (in tables). Bedrock is too near the surface for the specified use.

**Depth class.** Refers to the depth to a root-restricting layer. Unless otherwise stated, this layer is understood to be consolidated bedrock. The depth classes in this survey are:

Very shallow .....	less than 10 inches
Shallow .....	10 to 20 inches
Moderately deep .....	20 to 40 inches
Deep .....	40 to 60 inches
Very deep .....	more than 60 inches

**Diorite.** A coarse grained igneous rock with the composition of andesite (no quartz or orthoclase). It is composed of about 75 percent plagioclase feldspars with the balance being ferromagnesian silicates.

**Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

**Drainage class** (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the

blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

*Excessively drained.*—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

*Somewhat excessively drained.*—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

*Well drained.*—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

*Moderately well drained.*—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

*Somewhat poorly drained.*—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

*Poorly drained.*—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

*Very poorly drained.*—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils

are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Eroded (soil phase).** Because of erosion, these soils have lost an average of 25 to 75 percent of the original A horizon or the uppermost 2 to 6 inches if the original A horizon was less than 8 inches thick.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion (geologic).* Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

*Erosion (accelerated).* Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

**Erosion classes.** Classes based on estimates of past erosion. The classes are as follows:

*Class 1.*—Soils that have lost some of the original A horizon but on the average less than 25 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most of the area, the thickness of the surface layer is within the normal range of variability of the uneroded soil. Class 1 erosion typically is not designated in the name of the map unit or in the map symbol.

*Class 2.*—Soils that have lost an average of 25 to 75 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most cultivated areas of class 2 erosion, the surface layer consists of a mixture of the original A horizon and material from below. Some areas may have intricate patterns ranging from uneroded spots to spots where all of the original A horizon has been removed.

*Class 3.*—Soils that have lost an average of 75 percent or more of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). In most cultivated areas of class 3 erosion, material that was below the original A horizon is exposed. The plow layer consists entirely or largely of this material.

*Class 4.*—Soils that have lost all of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick)

plus some or all of the deeper horizons throughout most of the area. The original soil can be identified only in spots. Some areas may be smooth, but most have an intricate pattern of gullies.

**Erosion hazard.** Terms describing the potential for future erosion, inherent in the soil itself, in inadequately protected areas. The following definitions are based on estimated annual soil loss in tons per acre (values determined by the Universal Soil Loss Equation assuming bare soil conditions and using rainfall and climate factors for North Carolina):

0 tons per acre .....	none
Less than 1 ton per acre .....	slight
1 to 5 tons per acre .....	moderate
5 to 10 tons per acre .....	severe
More than 10 tons per acre .....	very severe

**Excess fines** (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

**Fallow.** Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

**Felsic rock.** A general term for light colored igneous rock and some metamorphic crystalline rock that have an abundance of quartz, feldspars, feldspathoids, and muscovite mica.

**Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**First bottom.** The normal flood plain of a stream, subject to frequent or occasional flooding.

**Flooding.** The temporary covering of the soil surface by flowing water from any source, such as overflowing streams, runoff from adjacent or surrounding slopes, and inflow from high tides. The frequency of flooding generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year).

*Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). The duration of flooding is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month).

**Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

**Fluvial.** Of or pertaining to rivers; growing or living in streams or ponds; produced by river action, as a fluvial plain.

**Forest type.** A classification of forest land based on the species forming the majority of live-tree stocking.

**Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

**Gneiss.** A coarse grained metamorphic rock in which bands rich in granular minerals alternate with bands in which schistose minerals predominate. It is commonly formed by the metamorphism of granite.

**Granite.** A coarse grained igneous rock dominated by light colored minerals, consisting of about 50 percent orthoclase and 25 percent quartz with the balance being plagioclase feldspars and ferromagnesian silicates. Granites and granodiorites comprise 95 percent of all intrusive rocks.

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Gravelly soil material.** Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

**Green-manure crop** (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

**Ground water** (geology). Water filling all the unblocked pores of the material below the water table.

**Gully.** A miniature valley with steep sides cut by

running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows: *O horizon*.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

*A horizon*.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon*.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

*B horizon*.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

*C horizon*.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

*Cr layer*.—Consolidated rock (weathered bedrock) beneath the soil that can be dug with difficulty by hand tools. The soft bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

*R layer*.—Consolidated rock (unweathered bedrock) beneath the soil. The hard bedrock

commonly underlies a C horizon but can be directly below an A or a B horizon.

**Hornblende.** A rock-forming ferromagnesian silicate mineral of the amphibole group.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

**Igneous rock.** Rock formed by solidification of molten rock, generally crystalline in nature.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

**Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Intermediate rock.** Igneous or metamorphic crystalline rock that is intermediate in composition between mafic and felsic rock.

**Irrigation.** Application of water to soils to assist in production of crops.

**Kaolinite.** An aluminosilicate clay mineral with a 1:1 layer structure; that is, a silicon tetrahedral sheet alternating with an aluminum octahedral sheet. Little or no expansion occurs when water mixes with the clay.

**Knoll.** A small, low, rounded hill rising above adjacent landforms.

**Large stones** (in tables). Rock fragments that are 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loamy.** A general textural term that includes coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, and silty clay loam. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of loamy very fine sand or finer material that contains less than 35 percent clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

**Loess.** Fine grained material, dominantly of silt-sized particles, deposited by wind.

**Low strength.** The soil is not strong enough to support loads.

**Mafic rock.** A dark rock composed predominantly of magnesium silicates. It contains little quartz, feldspar, or muscovite mica.

**Mean annual increment.** The average yearly volume of a stand of trees from the year of origin to the age under consideration.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

**Micas.** A group of silicate minerals characterized by sheet or scale cleavage. Biotite is the ferromagnesian black mica. Muscovite is the potassic white mica.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

**Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.

**Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.

**Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.

**Montmorillonite.** An aluminosilicate clay mineral with 2:1 layer structure; that is, two silicon tetrahedral sheets enclosing an aluminium octahedral sheet. Considerable expansion may occur when water mixes with the clay.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

**Munsell notation.** A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

**Neutral soil.** A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

**No-till planting.** A method of planting crops in which there is virtually no seedbed preparation. A thin slice of the soil is opened, and the seed is planted at the desired depth.

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition.

**Overstory.** The portion of the trees in a forest stand forming the upper crown cover.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedon.** The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10



square meters), depending on the variability of the soil.

**Percolation.** The downward movement of water through the soil.

**Percs slowly** (in tables). The slow movement of water through the soil adversely affects the specified use.

**Permeability.** The quality of the soil that enables water to move downward through the profile.

Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow .....	less than 0.06 inch
Slow .....	0.06 to 0.2 inch
Moderately slow.....	0.2 to 0.6 inch
Moderate .....	0.6 inch to 2.0 inches
Moderately rapid .....	2.0 to 6.0 inches
Rapid.....	6.0 to 20 inches
Very rapid .....	more than 20 inches

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Piedmont.** The physiographic region of central North Carolina characterized by rolling landscapes formed from the weathering of residual rock material.

**Piping** (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plowpan.** A compacted layer formed in the soil directly below the plowed layer.

**Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poor filter** (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

**Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Poor outlets** (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Reaction, soil.** A measure of acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid .....	below 3.5
Extremely acid .....	3.5 to 4.4
Very strongly acid .....	4.5 to 5.0
Strongly acid .....	5.1 to 5.5
Moderately acid .....	5.6 to 6.0
Slightly acid .....	6.1 to 6.5
Neutral .....	6.6 to 7.3
Slightly alkaline.....	7.4 to 7.8
Moderately alkaline .....	7.9 to 8.4
Strongly alkaline.....	8.5 to 9.0
Very strongly alkaline.....	9.1 and higher

**Reforestation.** The process in which tree seedlings are planted or become naturally established in an area that was once forested.

**Regolith.** The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

**Rill.** A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

**Rippable.** Rippable bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

**Road cut.** A sloping surface made by mechanical means during road construction. It is generally on the uphill section of a road.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Rooting depth** (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff class** (surface). Refers to the rate at which water flows away from the soil over the surface

without infiltrating. Six classes of rate of runoff are recognized:

**Ponded.**—Little of the precipitation and water that runs onto the soil escapes as runoff, and free water stands on the surface for significant periods. The amount of water that is removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs on level and nearly level soils in depressions. The water depth may fluctuate greatly.

**Very slow.**—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils are commonly level or nearly level or are very open and porous.

**Slow.**—Surface water flows away so slowly that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils are nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

**Medium.**—Surface water flows away so rapidly that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils are nearly level or gently sloping and absorb precipitation at a moderate rate, or they are steeper but absorb water rapidly.

**Rapid.**—Surface water flows away so rapidly that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep and have moderate or slow rates of absorption.

**Very rapid.**—Surface water flows away so rapidly that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep and absorb precipitation slowly.

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Sandy.** A general textural term that includes coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, and

loamy very fine sand. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of sand or loamy sand that contains less than 50 percent very fine sand, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

**Sapric soil material (muck).** The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

**Saprolite** (soil science). Unconsolidated, residual material underlying the soil and grading to hard bedrock below.

**Schist.** A metamorphic rock dominated by fibrous or platy minerals. It has schistose cleavage and is a product of regional metamorphism.

**Seasonal high water table.** The highest level of a saturated zone (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

**Second bottom.** The first stream terrace above the present flood plain. It is slightly higher in elevation and may be subject to rare flooding. It is the result of uplift or the lowering of base level.

**Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

**Seepage** (in tables). The movement of water through the soil adversely affects the specified use.

**Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale.** Sedimentary rock formed by the hardening of a clay deposit.

**Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

**Shrink-swell.** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Silica.** A combination of silicon and oxygen. The mineral form is called quartz.

**Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

**Skidding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most systems involve pulling the trees with wire cables attached to a bulldozer or rubber-tired tractor. Generally, felled trees are skidded or pulled with one end lifted to reduce friction and soil disturbance.

**Skid trails.** The paths left from skidding logs and the bulldozer or tractor used to pull them.

**Slate.** A fine grained metamorphic rock with well developed slaty cleavage. Formed by the low-grade regional metamorphism of shale.

**Slippage** (in tables). The soil mass is susceptible to movement downslope when loaded, excavated, or wet.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey area slope classes are as follows:

Nearly level.....	0 to 2 percent
Gently sloping .....	2 to 6 percent
Moderately sloping .....	6 to 10 percent
Strongly sloping.....	10 to 15 percent
Moderately steep .....	15 to 25 percent
Steep .....	25 to 45 percent

**Slope** (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

**Slow intake** (in tables). The slow movement of water into the soil.

**Small stones** (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

**Soil.** A natural, three-dimensional body at the earth's

surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil compaction.** An alteration of soil structure that ultimately can affect the biological and chemical properties of the soil. Compaction decreases the extent of voids and increases bulk density.

**Soil map unit.** A kind of soil or miscellaneous area or a combination of two or more soils or one or more soils and one or more miscellaneous areas that can be shown at the scale of mapping for the defined purposes and objectives of the soil survey. They are generally designed to reflect significant differences in use and management.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand .....	2.0 to 1.0
Coarse sand .....	1.0 to 0.5
Medium sand .....	0.5 to 0.25
Fine sand.....	0.25 to 0.10
Very fine sand .....	0.10 to 0.05
Silt.....	0.05 to 0.002
Clay.....	less than 0.002

**Soil strength.** Load supporting capacity of a soil at specific moisture and density conditions.

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

**Stand density.** The degree to which an area is covered with living trees. It is usually expressed in units of basal area per acre, number of trees per acre, or the percentage of ground covered by the tree canopy as viewed from above.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Stripcropping.** Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates.

The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Stubble mulch.** Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Subsoiling.** Breaking up a compact subsoil by pulling a special chisel through the soil.

**Subsurface layer.** Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

**Suitability ratings.** Ratings for the degree of suitability of soils for pasture, crops, woodland, and engineering uses. The ratings and the general criteria used for their selection are as follows:  
*Well suited.*—The intended use may be initiated and maintained by using only the standard materials and methods typically required for that use. Good results can be expected.

*Moderately suited.*—The limitations affecting the intended use make special planning, design, or maintenance necessary.

*Poorly suited.*—The intended use is difficult or costly to initiate and maintain because of certain soil properties, such as steep slopes, a high hazard of erosion, a high water table, low fertility, or a hazard of flooding. Major soil reclamation, special design, or intensive management practices are needed.

*Unsuited.*—The intended use is very difficult or costly to initiate and maintain, and thus it generally should not be undertaken.

**Summer fallow.** The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters).

Frequently designated as the “plow layer,” or the “Ap horizon.”

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

**Terrace.** An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

**Terrace** (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.” The textural classes are defined as follows:

*Sands* (*coarse sand*, *sand*, *fine sand*, and *very fine sand*).—Soil material in which the content of sand is 85 percent or more and the percentage of silt plus 1.5 times the percentage of clay does not exceed 15.

*Loamy sands* (*loamy coarse sand*, *loamy sand*, *loamy fine sand*, and *loamy very fine sand*).—Soil material in which, at the upper limit, the content of sand is 85 to 90 percent and the percentage of silt plus 1.5 times the percentage of clay is not less than 15; at the lower limit, the content of sand is 70 to 85 percent and the percentage of silt plus twice the percentage of clay does not exceed 30.

*Sandy loams* (*coarse sandy loam*, *sandy loam*, *fine sandy loam*, and *very fine sandy loam*).—Soil material in which the content of clay is 20 percent or less, the percentage of silt plus twice the percentage of clay exceeds 30, and the content of sand is 52 percent or more or soil material in which the content of clay is less than 7 percent, the content of silt is less than 50 percent, and the content of sand is 43 to 52 percent.

*Loam*.—Soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

*Silt loam*.—Soil material that contains 50 or more percent silt and 12 to 27 percent clay or 50 to 80 percent silt and less than 12 percent clay.

**Silt.**—Soil material that contains 80 or more percent silt and less than 12 percent clay.

**Sandy clay loam.**—Soil material that contains 20 to 35 percent clay, less than 28 percent silt, and 45 or more percent sand.

**Clay loam.**—Soil material that contains 27 to 40 percent clay and 20 to 45 percent sand.

**Silty clay loam.**—Soil material that contains 27 to 40 percent clay and less than 20 percent sand.

**Sandy clay.**—Soil material that contains 35 or more percent clay and 45 or more percent sand.

**Silty clay.**—Soil material that contains 40 or more percent clay and 40 or more percent silt.

**Clay.**—Soil material that contains 40 or more percent clay, less than 45 percent sand, and less than 40 percent silt.

**Thin layer** (in tables). An otherwise suitable soil material that is too thin for the specified use.

**Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

**Toe slope.** The outermost inclined surface at the base of a hill; part of a foot slope.

**Topography.** The relative positions and elevations of the natural or manmade features of an area that describe the configuration of its surface.

**Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

**Toxicity** (in tables). An excessive amount of toxic substances in the soil, such as sodium or sulfur, severely hinders the establishment of vegetation or severely restricts plant growth.

**Trace elements.** Chemical elements, such as zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

**Underlying material.** Technically the C horizon; the part of the soil below the biologically altered A and B horizons.

**Understory.** The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth.

**Universal Soil Loss Equation.** An equation used to

design water erosion control systems. The equation is  $A = RKLSPC$  wherein A is the average annual soil loss in tons per acre per year, R is the rainfall factor, K is the soil erodibility factor, L is the length of slope, S is the steepness of slope, P is the conservation practice factor, and C is the cropping and management factor.

**Unstable fill** (in tables). There is a risk of caving or sloughing on banks of fill material.

**Upland** (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

**Valley fill.** In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited in stream valleys by heavily loaded streams.

**Water table (apparent).** A thick zone of free water in the soil. The apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

**Water table (perched).** A saturated zone of water in the soil standing above an unsaturated zone.

**Water table (seasonal high).** The highest level of a saturated zone in the soil (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

**Weathering.** All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

**Well graded.** Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

**Wetness.** A general term applied to soils that hold water at or near the surface long enough to be a common management problem.

**Wilting point (or permanent wilting point).** The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.



## Tables

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TABLE 1.--TEMPERATURE AND PRECIPITATION  
(Recorded in the period 1957-81 at Roxboro, North Carolina)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--		
° F	° F	° F	° F	° F	Units	In	In	In		In	
January-----	48.2	27.0	37.6	71	3	21	3.63	2.10	4.98	7	4.5
February-----	50.7	28.6	39.7	74	7	26	3.41	1.72	4.86	6	2.9
March-----	60.5	36.6	48.6	84	17	121	3.57	2.29	4.72	7	3.6
April-----	71.8	46.3	59.1	90	28	279	3.14	1.82	4.31	6	.0
May-----	78.2	54.4	66.3	91	36	505	3.89	2.55	5.11	7	.0
June-----	84.5	61.7	73.1	97	46	693	3.78	1.86	5.43	6	.0
July-----	87.9	65.3	76.6	99	53	825	4.23	2.39	5.85	7	.0
August-----	86.7	64.2	75.5	97	49	791	4.67	2.60	6.50	7	.0
September---	81.4	57.7	69.6	94	40	588	4.02	1.40	6.19	5	.0
October-----	70.6	46.6	58.6	86	26	287	3.26	1.16	5.00	6	.0
November-----	61.7	38.6	50.2	80	17	90	3.02	1.32	4.45	6	.3
December-----	51.1	30.0	40.6	73	9	25	3.32	1.58	4.81	6	1.7
Yearly:											
Average---	69.4	46.4	58.0	---	---	---	---	---	---	---	---
Extreme---	---	---	---	100	3	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,251	43.94	37.69	49.94	76	13.0

\* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).



TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1957-81 at Roxboro, North Carolina)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 2	Apr. 7	Apr. 25
2 years in 10 later than--	Mar. 25	Apr. 1	Apr. 19
5 years in 10 later than--	Mar. 9	Mar. 19	Apr. 7
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 29	Oct. 6	Sept. 29
2 years in 10 earlier than--	Nov. 8	Oct. 18	Oct. 11
5 years in 10 earlier than--	Nov. 26	Nov. 9	Nov. 1

TABLE 3.--GROWING SEASON

(Recorded in the period 1957-81 at Roxboro,  
North Carolina)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	228	194	172
8 years in 10	238	206	183
5 years in 10	258	231	204
2 years in 10	280	257	226
1 year in 10	293	273	240

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
ApB	Appling sandy loam, 2 to 6 percent slopes-----	11,330	4.4
ApC	Appling sandy loam, 6 to 10 percent slopes-----	5,240	2.0
AuB	Appling-Urban land complex, 2 to 10 percent slopes-----	1,100	0.4
CeB	Cecil sandy loam, 2 to 6 percent slopes-----	3,910	1.5
CeC	Cecil sandy loam, 6 to 10 percent slopes-----	1,260	0.5
Cw	Chewacla and Wehadkee loams, frequently flooded-----	17,100	6.6
EnB	Enon fine sandy loam, 2 to 6 percent slopes-----	7,960	3.1
EnC	Enon fine sandy loam, 6 to 10 percent slopes-----	3,466	1.3
GeB	Georgeville loam, 2 to 6 percent slopes-----	23,860	9.2
GeC	Georgeville loam, 6 to 10 percent slopes-----	13,400	5.2
GfB2	Georgeville clay loam, 2 to 6 percent slopes, eroded-----	1,176	0.5
GoC	Goldston channery silt loam, 4 to 15 percent slopes-----	2,280	0.9
GoF	Goldston channery silt loam, 15 to 45 percent slopes-----	2,820	1.1
HeB	Helena sandy loam, 2 to 6 percent slopes-----	11,590	4.5
HeC	Helena sandy loam, 6 to 10 percent slopes-----	2,596	1.0
HfB	Helena-Sedgefield sandy loams, 2 to 6 percent slopes-----	5,300	2.1
HrB	Herndon loam, 2 to 6 percent slopes-----	13,050	5.1
HrC	Herndon loam, 6 to 10 percent slopes-----	5,530	2.1
LgB	Lignum loam, 2 to 6 percent slopes-----	25,440	9.8
MeB	Mecklenburg loam, 2 to 6 percent slopes-----	2,600	1.0
MeC	Mecklenburg loam, 6 to 10 percent slopes-----	965	0.4
OnA	Orange loam, 0 to 2 percent slopes-----	5,378	2.1
OrB	Orange gravelly loam, 2 to 7 percent slopes-----	7,950	3.1
PaB2	Pacolet clay loam, 2 to 6 percent slopes, eroded-----	1,855	0.7
PaC2	Pacolet clay loam, 6 to 10 percent slopes, eroded-----	1,316	0.5
RoF	Rion sandy loam, 25 to 40 percent slopes-----	1,080	0.4
TaD	Tatum loam, 10 to 15 percent slopes-----	4,820	1.9
TaE	Tatum loam, 15 to 35 percent slopes-----	4,708	1.8
UdB	Udorthents, loamy, gently sloping-----	1,480	0.6
Ur	Urban land-----	870	0.3
VaB	Vance sandy loam, 2 to 6 percent slopes-----	8,570	3.3
VaC	Vance sandy loam, 6 to 10 percent slopes-----	3,340	1.3
WeB	Wedowee sandy loam, 2 to 6 percent slopes-----	3,470	1.3
WeC	Wedowee sandy loam, 6 to 10 percent slopes-----	4,462	1.7
WeD	Wedowee sandy loam, 10 to 15 percent slopes-----	6,570	2.5
WeE	Wedowee sandy loam, 15 to 25 percent slopes-----	4,905	1.9
WfC	Wedowee sandy loam, 2 to 10 percent slopes, extremely bouldery-----	1,800	0.7
WhB	Wickham sandy loam, 2 to 6 percent slopes, rarely flooded-----	370	0.1
WkB	Wilkes loam, 2 to 8 percent slopes-----	4,330	1.7
WkD	Wilkes loam, 8 to 15 percent slopes-----	6,860	2.7
WkF	Wilkes loam, 15 to 45 percent slopes-----	13,540	5.2
	Water-----	9,060	3.5
	Total-----	258,707	100.0

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat	Tobacco	Oats	Pasture	Grass- legume hay
		Bu	Bu	Bu	Lbs	Bu	AUM*	Tons
ApB----- Appling	IIe	95	35	70	2,400	85	8.0	4.8
ApC----- Appling	IIIe	90	30	65	2,200	80	7.5	4.5
AuB**: Appling-----	IIIe	---	---	---	---	---	---	---
Urban land----	VIIIIs	---	---	---	---	---	---	---
CeB----- Cecil	IIe	95	35	70	2,100	85	8.0	3.2
CeC----- Cecil	IIIe	90	30	65	2,000	80	7.5	3.0
Cw: Chewacla-----	IVw	---	---	---	---	---	---	---
Wehadkee-----	VIw	---	---	---	---	---	8.5	---
EnB----- Enon	IIe	90	30	65	1,900	65	8.5	5.1
EnC----- Enon	IIIe	80	25	60	1,700	60	8.0	4.8
GeB----- Georgeville	IIe	95	35	70	2,200	85	8.0	4.8
GeC----- Georgeville	IIIe	85	30	65	2,000	80	7.5	4.5
GfB2----- Georgeville	IIIe	85	30	65	---	80	7.5	4.5
GoC----- Goldston	IVs	70	20	35	---	50	4.5	2.8
GoF----- Goldston	VIIIs	---	---	---	---	---	3.0	1.8
HeB----- Helena	IIe	80	30	65	2,100	70	6.0	3.5
HeC----- Helena	IIIe	70	25	60	1,800	55	5.5	3.2
HfB: Helena-----	IIe	80	30	40	2,100	65	5.8	3.5
Sedgefield----	IIe	85	35	40	2,200	65	5.5	3.3
HrB----- Herndon	IIe	90	30	45	2,200	80	7.5	3.5

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat	Tobacco	Oats	Pasture	Grass- legume hay
		Bu	Bu	Bu	Lbs	Bu	AUM*	Tons
HrC----- Herndon	IIIe	85	30	40	2,200	70	7.0	3.0
LgB----- Lignum	IIE	90	30	65	1,900	50	7.0	2.5
MeB----- Mecklenburg	IIE	90	35	65	2,100	70	6.0	3.6
MeC----- Mecklenburg	IIIe	80	30	60	2,000	65	5.5	3.3
OnA----- Orange	IIIw	80	25	60	1,800	50	5.6	2.8
OrB----- Orange	IIIe	80	25	60	1,700	50	6.0	3.0
PaB2----- Pacolet	IIIe	75	25	50	1,900	70	4.8	3.0
PaC2----- Pacolet	IVe	70	22	45	1,600	65	4.6	2.8
RoF----- Rion	VIIe	---	---	---	---	---	---	---
TaD----- Tatum	IIIe	85	30	45	1,800	65	7.5	3.0
TaE----- Tatum	VIe	---	---	---	---	---	5.0	2.5
UdB----- Udorthents	VIIIs	---	---	---	---	---	---	---
Ur**----- Urban land	VIIIIs	---	---	---	---	---	---	---
VaB----- Vance	IIE	80	30	60	2,000	75	7.0	4.0
VaC----- Vance	IIIe	75	30	55	1,900	65	6.5	3.5
WeB----- Wedowee	IIE	80	28	60	2,100	75	6.0	4.2
WeC----- Wedowee	IIIe	75	25	50	1,900	70	5.5	3.8
WeD----- Wedowee	IVe	60	22	30	1,600	65	5.0	3.6
WeE----- Wedowee	VIe	---	---	---	---	---	4.0	3.0
WfC----- Wedowee	VIIs	---	---	---	---	---	4.0	3.2

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat	Tobacco	Oats	Pasture	Grass- legume hay
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Lbs</u>	<u>Bu</u>	<u>AUM*</u>	<u>Tons</u>
WhB----- Wickham	IIe	110	40	90	2,600	90	9.5	5.5
WkB----- Wilkes	IVe	65	20	35	1,700	45	7.5	4.5
WkD----- Wilkes	VIe	---	---	---	---	---	7.0	4.2
WkF----- Wilkes	VIIe	---	---	---	---	---	6.5	3.9

\* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

\*\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Map symbol and soil name	Ordi- nation symbol	Management concerns			Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Common trees	Site index	Volume*	
ApB, ApC----- Appling	8A	Slight	Slight	Slight	Loblolly pine-----	84	118	Loblolly pine, shortleaf pine.
					Shortleaf pine-----	65	99	
					Virginia pine-----	74	114	
					Scarlet oak-----	74	56	
					White oak-----	64	47	
					Yellow-poplar-----	88	86	
					Sweetgum-----	---	---	
					Southern red oak-----	---	---	
					Hickory-----	---	---	
CeB, CeC----- Cecil	8A	Slight	Slight	Slight	Loblolly pine-----	83	116	Loblolly pine, shortleaf pine.
					Shortleaf pine-----	69	108	
					Virginia pine-----	71	110	
					White oak-----	79	61	
					Northern red oak-----	81	63	
					Southern red oak-----	79	61	
					Post oak-----	72	54	
					Scarlet oak-----	81	63	
					Sweetgum-----	76	70	
Cw: Chewacla-----	7W	Slight	Moderate	Slight	Loblolly pine-----	95	142	Loblolly pine.
					Yellow-poplar-----	95	96	
					Sweetgum-----	97	128	
					Water oak-----	80	74	
					Eastern cottonwood-----	---	---	
					Green ash-----	---	---	
					Southern red oak-----	---	---	
					Blackgum-----	---	---	
					Red maple-----	---	---	
Wehadkee-----	8W	Slight	Severe	Moderate	Loblolly pine-----	93	138	Loblolly pine.
					Yellow-poplar-----	100	105	
					Sweetgum-----	94	119	
					Willow oak-----	110	110	
					Water oak-----	91	87	
					Green ash-----	---	---	
					White ash-----	---	---	
					American sycamore-----	---	---	
					River birch-----	---	---	
EnB, EnC----- Enon	7A	Slight	Slight	Slight	Loblolly pine-----	73	98	Loblolly pine, shortleaf pine.
					Shortleaf pine-----	63	95	
					Virginia pine-----	---	---	
					Northern red oak-----	---	---	
					Sweetgum-----	87	98	
					White oak-----	---	---	
					Yellow-poplar-----	88	86	
					Hickory-----	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns			Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Common trees	Site index	Volume*	
GeB, GeC----- Georgeville	8A	Slight	Slight	Slight	Loblolly pine----- Hickory----- Shortleaf pine----- White oak----- Yellow-poplar----- Southern red oak----	81 --- 63 69 --- 67	112 --- 95 51 --- 49	Loblolly pine, shortleaf pine.
GfB2----- Georgeville	6C	Slight	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- Hickory----- Yellow-poplar-----	70 --- --- ---	93 --- --- ---	Loblolly pine, shortleaf pine.
GoC----- Goldston	7D	Slight	Slight	Moderate	Shortleaf pine----- Loblolly pine----- Southern red oak----- White oak----- Post oak----- Hickory----- Virginia pine----- Red maple-----	68 76 66 69 --- --- --- ---	106 93 48 51 --- --- --- ---	Loblolly pine, shortleaf pine.
GoF----- Goldston	7R	Moderate	Moderate	Moderate	Shortleaf pine----- Loblolly pine----- Southern red oak----- White oak----- Post oak----- Hickory----- Virginia pine----- Red maple-----	68 76 66 69 --- --- --- ---	106 93 48 51 --- --- --- ---	Loblolly pine, shortleaf pine.
HeB, HeC----- Helena	8A	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- White oak----- Yellow-poplar----- Sweetgum----- Northern red oak----- Southern red oak----- Black oak----- Hickory----- Virginia pine----- Willow oak----- American elm-----	84 66 --- --- --- --- --- --- --- --- --- ---	118 101 --- --- --- --- --- --- --- --- --- ---	Loblolly pine.
HfB: Helena-----	8A	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- White oak----- Yellow-poplar----- Sweetgum----- Northern red oak----- Southern red oak----- Black oak----- Hickory----- Virginia pine----- Willow oak----- American elm-----	84 66 --- --- --- --- --- --- --- --- --- ---	118 101 --- --- --- --- --- --- --- --- --- ---	Loblolly pine.

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	Volume*	
HfB: Sedgefield-----	8W	Slight	Moderate	Slight	Loblolly pine----- Shortleaf pine----- Virginia pine----- Southern red oak----- Northern red oak----- Sweetgum----- Yellow-poplar----- White oak----- Willow oak----- American elm-----	80 --- --- --- --- --- --- --- --- ---	110 --- --- --- --- --- --- --- --- ---	Loblolly pine.
HrB, HrC----- Herndon	8A	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- White oak----- Southern red oak----- Yellow-poplar----- Virginia pine----- Hickory-----	80 61 65 72 91 --- ---	110 90 47 54 92 --- ---	Loblolly pine.
LgB----- Lignum	7W	Slight	Moderate	Slight	Loblolly pine----- Northern red oak----- Virginia pine----- Shortleaf pine----- Southern red oak----- Red maple----- Yellow-poplar----- White oak-----	76 68 74 66 68 --- --- ---	103 50 114 101 50 --- --- ---	Loblolly pine, shortleaf pine.
MeB, MeC----- Mecklenburg	7A	Slight	Slight	Slight	Shortleaf pine----- Loblolly pine----- Virginia pine----- Yellow-poplar----- Northern red oak----- Sweetgum----- White oak----- Hickory-----	64 79 62 97 --- --- --- ---	97 108 95 98 --- --- --- ---	Loblolly pine, shortleaf pine.
OnA, OrB----- Orange	7W	Slight	Moderate	Slight	Loblolly pine----- Northern red oak----- Virginia pine----- Shortleaf pine-----	75 60 60 60	101 43 91 88	Loblolly pine, shortleaf pine.
PaB2, PaC2----- Pacolet	6C	Slight	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- Yellow-poplar-----	70 60 80	93 88 71	Loblolly pine, shortleaf pine.
RoF----- Rion	8R	Moderate	Moderate	Slight	Loblolly pine----- Post oak----- Shortleaf pine----- Southern red oak----- Sweetgum----- White oak----- Yellow-poplar----- Hickory----- Northern red oak-----	80 65 70 80 80 70 90 --- ---	110 48 110 62 79 52 90 --- ---	Loblolly pine, shortleaf pine.

See footnote at end of table.



TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns			Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Common trees	Site index	Volume*	
TaD----- Tatum	8A	Slight	Slight	Slight	Loblolly pine----- Northern red oak----- Virginia pine----- Yellow-poplar-----	78 72 68 83	107 54 105 77	Loblolly pine.
TaE----- Tatum	8R	Moderate	Moderate	Slight	Loblolly pine----- Northern red oak----- Virginia pine----- Yellow-poplar-----	78 72 68 83	107 54 105 77	Loblolly pine.
VaB, VaC----- Vance	7A	Slight	Slight	Slight	Shortleaf pine----- Loblolly pine----- White oak----- Northern red oak----- Hickory----- Virginia pine----- Yellow-poplar----- Southern red oak----- Sweetgum-----	68 73 76 72 --- --- --- --- ---	106 98 58 54 --- --- --- --- ---	Loblolly pine, shortleaf pine.
WeB, WeC, WeD----- Wedowee	8A	Slight	Slight	Slight	Loblolly pine----- Virginia pine----- Shortleaf pine----- Southern red oak----- Northern red oak----- White oak-----	80 70 70 70 70 65	110 109 108 52 50 47	Loblolly pine, shortleaf pine.
WeE----- Wedowee	8R	Moderate	Moderate	Slight	Loblolly pine----- Virginia pine----- Shortleaf pine----- Southern red oak----- Northern red oak----- White oak-----	80 70 70 70 70 65	110 109 108 52 50 47	Loblolly pine, shortleaf pine.
WfC----- Wedowee	8X	Slight	Severe	Slight	Loblolly pine----- Virginia pine----- Shortleaf pine----- White oak-----	80 70 70 65	100 109 108 47	Loblolly pine, shortleaf pine.
WhB----- Wickham	9A	Slight	Slight	Slight	Loblolly pine----- Yellow-poplar----- White oak----- Southern red oak----- Sweetgum----- Red maple----- Northern red oak----- Water oak----- Hickory----- Shortleaf pine-----	90 89 84 82 --- --- --- --- --- ---	131 88 66 64 --- --- --- --- --- ---	Loblolly pine.
WkB, WkD----- Wilkes	7D	Slight	Slight	Slight	Loblolly pine----- Post oak----- Shortleaf pine----- Southern red oak----- Sweetgum----- White oak----- Hickory----- Virginia pine-----	75 79 63 76 82 --- --- ---	101 61 95 58 84 --- --- ---	Loblolly pine, shortleaf pine.

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns			Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Common trees	Site index	Volume*	
WkF----- Wilkes	7R	Moderate	Moderate	Slight	Loblolly pine-----	75	101	Loblolly pine, shortleaf pine.
					Post oak-----	79	61	
					Shortleaf pine-----	63	95	
					Southern red oak-----	76	58	
					Sweetgum-----	82	84	
					White oak-----	---	---	
					Hickory-----	---	---	
					Virginia pine-----	---	---	

\* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

TABLE 7.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ApB----- Appling	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
ApC----- Appling	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
AuB*: Appling-----	Slight-----	Slight-----	Severe: slope.	Slight-----	Slight.
Urban land.					
CeB----- Cecil	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
CeC----- Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
Cw*: Chewacla-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Wehadkee-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
EnB----- Enon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight-----	Slight.
EnC----- Enon	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
GeB----- Georgeville	Slight-----	Slight-----	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
GeC----- Georgeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
GfB2----- Georgeville	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
GoC----- Goldston	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight-----	Severe: depth to rock.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GoF----- Goldston	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
HeB----- Helena	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
HeC----- Helena	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness, slope.
HfB*: Helena-----	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Sedgefield-----	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
HrB----- Herndon	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
HrC----- Herndon	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
LgB----- Lignum	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
MeB----- Mecklenburg	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight-----	Slight.
MeC----- Mecklenburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
OnA, OrB----- Orange	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, depth to rock.
PaB2----- Pacolet	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
PaC2----- Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
RoF----- Rion	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TaD----- Tatum	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TaE----- Tatum	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
UdB. Udorthents					
Ur*. Urban land					
VaB----- Vance	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight-----	Slight.
VaC----- Vance	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
WeB----- Wedowee	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
WeC, WeD----- Wedowee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
WeE----- Wedowee	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
WfC----- Wedowee	Slight-----	Slight-----	Severe: large stones, slope.	Moderate: large stones.	Moderate: small stones, large stones.
WhB----- Wickham	Severe: flooding.	Slight-----	Moderate: slope.	Slight-----	Slight.
WkB----- Wilkes	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight-----	Severe: depth to rock.
WkD----- Wilkes	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight-----	Severe: depth to rock.
WkF----- Wilkes	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
ApB----- Appling	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ApC----- Appling	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AuB*: Appling.  Urban land.										
CeB----- Cecil	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CeC----- Cecil	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Cw*: Chewacla----- Wehadkee-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
	Very poor.	Poor	Poor	Fair	Fair	Good	Fair	Poor	Fair	Fair.
EnB----- Enon	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EnC----- Enon	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GeB, GeC----- Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GfB2----- Georgeville	Fair	Fair	Fair	Good	Fair	Very poor.	Very poor.	Fair	Good	Very poor.
GoC----- Goldston	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
GoF----- Goldston	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HeB----- Helena	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HeC----- Helena	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HfB*: Helena-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sedgefield-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
HrB----- Herndon	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HrC----- Herndon	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LgB----- Lignum	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeB----- Mecklenburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeC----- Mecklenburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OnA----- Orange	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
OrB----- Orange	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PaB2, PaC2----- Pacolet	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
RoF----- Rion	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
TaD----- Tatum	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TaE----- Tatum	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UdB. Udorthents										
Ur*. Urban land										
VaB----- Vance	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
VaC----- Vance	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WeB----- Wedowee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WeC, WeD----- Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WeE----- Wedowee	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
WfC----- Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WhB----- Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
WkB----- Wilkes	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
WkD----- Wilkes	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
WkF----- Wilkes	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

\* See description of the map unit for composition and behavior characteristics of the map unit.



TABLE 9.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ApB----- Appling	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
ApC----- Appling	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
AuB*: Appling-----  Urban land.	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
CeB----- Cecil	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
CeC----- Cecil	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
Cw*: Chewacla-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Wehadkee-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, low strength.	Severe: wetness, flooding.
EnB----- Enon	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
EnC----- Enon	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
GeB----- Georgeville	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
GeC----- Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
GfB2----- Georgeville	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
GoC----- Goldston	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: depth to rock.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GoF----- Goldston	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
HeB----- Helena	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
HeC----- Helena	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: wetness, slope.
HfB*: Helena-----	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
Sedgefield-----	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
HrB----- Herndon	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
HrC----- Herndon	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
LgB----- Lignum	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
MeB----- Mecklenburg	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MeC----- Mecklenburg	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
OnA, OrB----- Orange	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness, depth to rock.
PaB2----- Pacolet	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
PaC2----- Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
RoF----- Rion	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TaD----- Tatum	Moderate: slope, too clayey.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
TaE----- Tatum	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
UdB. Udorthents						
Ur*. Urban land						
VaB----- Vance	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
VaC----- Vance	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
WeB----- Wedowee	Moderate: too clayey.	Slight-----	Slight-----	Moderate: shrink-swell, slope.	Moderate: low strength.	Slight.
WeC, WeD----- Wedowee	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
WeE----- Wedowee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
WFC----- Wedowee	Moderate: too clayey, large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: low strength.	Moderate: small stones, large stones.
WhB----- Wickham	Slight-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
WkB----- Wilkes	Severe: depth to rock.	Moderate: shrink-swell, depth to rock.	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: low strength.	Severe: depth to rock.
WkD----- Wilkes	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Severe: depth to rock.
WkF----- Wilkes	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ApB----- Appling	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
ApC----- Appling	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
AuB*: Appling-----	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
Urban land.					
CeB----- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
CeC----- Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
Cw*: Chewacla-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
Wehadkee-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness, thin layer.
EnB----- Enon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
EnC----- Enon	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
GeB----- Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
GeC----- Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
GfB2----- Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GoC----- Goldston	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, small stones.
GoF----- Goldston	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
HeB----- Helena	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
HeC----- Helena	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
HfB*: Helena-----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
Sedgefield-----	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
HrB----- Herndon	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
HrC----- Herndon	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
LgB----- Lignum	Severe: percs slowly, wetness.	Moderate: depth to rock, slope.	Severe: depth to rock, wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
MeB----- Mecklenburg	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
MeC----- Mecklenburg	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
OnA, OrB----- Orange	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
PaB2----- Pacolet	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Fair: too clayey.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PaC2----- Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
RoF----- Rion	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
TaD----- Tatum	Moderate: slope, depth to rock, percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Moderate: slope, depth to rock.	Poor: too clayey, hard to pack.
TaE----- Tatum	Severe: slope.	Severe: slope.	Severe: slope, too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey, hard to pack.
UdB. Udorthents					
Ur*. Urban land					
VaB----- Vance	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
VaC----- Vance	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
WeB----- Wedowee	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: too clayey.	Slight-----	Fair: too clayey.
WeC, WeD----- Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
WeE----- Wedowee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
WfC----- Wedowee	Moderate: percs slowly, large stones.	Moderate: seepage, slope, large stones.	Moderate: too clayey, large stones.	Slight-----	Fair: too clayey, large stones.
WhB----- Wickham	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding, too clayey.	Moderate: flooding.	Fair: too clayey.
WkB----- Wilkes	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WkD----- Wilkes	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
WkF----- Wilkes	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
ApB, ApC----- Appling	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
AuB*: Appling-----  Urban land.	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CeB, CeC----- Cecil	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Cw*: Chewacla-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Wehadkee-----	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
EnB, EnC----- Enon	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GeB, GeC, GfB2----- Georgeville	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GoC----- Goldston	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
GoF----- Goldston	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
HeB, HeC----- Helena	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
HfB*: Helena-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Sedgefield-----	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
HrB, HrC----- Herndon	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.



TABLE 11.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
LgB----- Lignum	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
MeB, MeC----- Mecklenburg	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
OnA, OrB----- Orange	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
PaB2, PaC2----- Pacquet	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
RoF----- Rion	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
TaD----- Tatum	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
TaE----- Tatum	Poor: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
UdB. Udorthents				
Ur*. Urban land				
VaB, VaC----- Vance	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WeB, WeC, WeD----- Wedowee	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WeE----- Wedowee	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
WfC----- Wedowee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
WhB----- Wickham	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
WkB, WkD----- Wilkes	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, small stones.
WkF----- Wilkes	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, small stones.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "moderate" and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
ApB----- Appling	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope-----	Soil blowing---	Favorable.
ApC----- Appling	Severe: slope.	Severe: hard to pack.	Deep to water	Slope-----	Slope, soil blowing.	Slope.
AuB*: Appling-----	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope-----	Soil blowing---	Favorable.
Urban land.						
CeB----- Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope, soil blowing.	Soil blowing---	Favorable.
CeC----- Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
Cw*: Chewacla-----	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding-----	Wetness, flooding.	Wetness-----	Wetness.
Wehadkee-----	Moderate: seepage.	Severe: wetness, piping.	Flooding-----	Wetness, soil blowing, flooding.	Wetness, soil blowing.	Wetness.
EnB----- Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Percs slowly, soil blowing.	Percs slowly.
EnC----- Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Slope, percs slowly, soil blowing.	Slope, percs slowly.
GeB----- Georgeville	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
GeC----- Georgeville	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
GfB2----- Georgeville	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
GoC, GoF----- Goldston	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
HeB----- Helena	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
HeC----- Helena	Severe: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, wetness, percs slowly.	Slope, percs slowly.
HfB*: Helena-----	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
Sedgefield-----	Moderate: seepage, slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.
HrB----- Herndon	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
HrC----- Herndon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
LgB----- Lignum	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack, wetness.	Slope, percs slowly.	Wetness, percs slowly, slope.	Erodes easily, wetness.	Wetness, erodes easily.
MeB----- Mecklenburg	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Percs slowly---	Percs slowly.
MeC----- Mecklenburg	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
OnA----- Orange	Moderate: depth to rock.	Severe: piping, hard to pack.	Percs slowly---	Depth to rock, wetness.	Wetness, percs slowly.	Wetness, depth to rock.
OrB----- Orange	Moderate: slope, depth to rock.	Severe: piping, hard to pack.	Percs slowly, slope.	Depth to rock, wetness.	Wetness, percs slowly.	Wetness, depth to rock.
PaB2----- Pacolet	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope-----	Favorable-----	Favorable.
PaC2----- Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope-----	Slope-----	Slope.
RoF----- Rion	Severe: seepage, slope.	Severe: piping.	Deep to water	Droughty, slope.	Soil blowing, slope.	Slope, droughty.
TaD, TaE----- Tatum	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
UdB. Udorthents						

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ur*. Urban land						
VaB----- Vance	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Percs slowly---	Percs slowly.
VaC----- Vance	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Slope, percs slowly.	Slope, percs slowly.
WeB----- Wedowee	Moderate: slope, seepage.	Severe: piping.	Deep to water	Slope-----	Favorable-----	Favorable.
WeC, WeD, WeE----- Wedowee	Severe: slope.	Severe: piping.	Deep to water	Slope-----	Slope-----	Slope.
WfC----- Wedowee	Moderate: seepage, slope.	Severe: piping, large stones.	Deep to water	Slope-----	Large stones---	Large stones.
WhB----- Wickham	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope-----	Soil blowing---	Favorable.
WkB----- Wilkes	Severe: depth to rock.	Severe: thin layer.	Deep to water	Slope, depth to rock.	Depth to rock	Depth to rock.
WkD, WkF----- Wilkes	Severe: slope, depth to rock.	Severe: thin layer.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--ENGINEERING INDEX PROPERTIES

(The symbol &lt; means less than; &gt; means more than. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
ApB, ApC----- Appling	0-6	Sandy loam-----	SM, SC-SM	A-2	0-5	86-100	80-100	55-91	15-35	<35	NP-7
	6-39	Sandy clay, clay loam, clay.	MH, ML, CL	A-7	0-5	95-100	90-100	70-95	51-80	41-74	15-30
	39-46	Sandy clay, clay loam, sandy clay loam.	SC, CL	A-4, A-6, A-7	0-5	95-100	85-100	70-90	40-75	25-45	8-22
	46-66	Variable-----	---	---	---	---	---	---	---	---	---
AuB*: Appling-----	0-6	Sandy loam-----	SM, SC-SM	A-2	0-5	86-100	80-100	55-91	15-35	<35	NP-7
	6-39	Sandy clay, clay loam, clay.	MH, ML, CL	A-7	0-5	95-100	90-100	70-95	51-80	41-74	15-30
	39-46	Sandy clay, clay loam, sandy clay loam.	SC, CL	A-4, A-6, A-7	0-5	95-100	85-100	70-90	40-75	25-45	8-22
	46-66	Variable-----	---	---	---	---	---	---	---	---	---
Urban land.											
CeB, CeC----- Cecil	0-7	Sandy loam-----	SM, SC-SM	A-2, A-4	0-5	84-100	80-100	67-90	26-42	<30	NP-7
	7-12	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-35	3-15
	12-52	Clay, clay loam	MH, ML, CH	A-7, A-5	0-5	97-100	92-100	72-99	55-95	41-80	9-37
	52-64	Variable-----	---	---	---	---	---	---	---	---	---
Cw*: Chewacla-----	0-9	Loam-----	ML, CL, CL-ML	A-4, A-6, A-7	0	98-100	95-100	70-100	55-90	25-49	4-20
	9-21	Silt loam, silty clay loam, loam.	ML, CL	A-4, A-6, A-7	0	96-100	95-100	80-100	51-98	30-49	4-22
	21-33	Clay loam, loam, sandy loam.	SM, SC-SM, ML, CL	A-4, A-7-6, A-6	0	96-100	95-100	60-100	36-70	20-45	2-15
	33-58	Silt loam, clay loam, sandy clay loam.	ML, MH, CL, CH	A-4, A-6, A-7	0	85-100	75-100	60-100	51-98	22-61	4-28
	58-72	Variable-----	---	---	---	---	---	---	---	---	---
Wehadkee-----	0-3	Loam-----	SM, SC, SC-SM	A-2, A-4	0	100	95-100	60-90	30-50	<30	NP-10
	3-34	Loam, sandy clay loam, very fine sandy loam.	CL, CL-ML, ML, SC	A-6, A-7, A-4	0	100	99-100	85-100	45-98	20-58	6-25
	34-60	Variable-----	---	---	---	---	---	---	---	---	---
EnB, EnC----- Enon	0-4	Fine sandy loam	SM, SC-SM, SC	A-2-4, A-4	0-5	80-100	80-100	60-85	25-49	<30	NP-10
	4-7	Clay loam, sandy clay loam.	CL	A-4, A-6	0-5	80-100	80-100	70-90	50-80	25-40	7-20
	7-33	Clay loam, clay	CH, CL	A-7-6	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	33-64	Variable-----	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
GeB, GeC----- Georgeville	0-8	Loam-----	ML	A-4, A-6	0-2	90-100	85-100	65-100	55-95	<40	NP-11
	8-58	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	85-100	80-100	65-98	41-85	15-45
	58-72	Silty clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	85-100	65-100	51-95	<30	NP-12
GfB2----- Georgeville	0-4	Clay loam-----	CL, ML	A-6, A-7, A-4	0-2	90-100	90-100	85-100	65-98	24-49	3-20
	4-58	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	85-100	80-100	65-98	41-85	15-45
	58-72	Silty clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-100	51-95	<30	NP-12
GoC, GoF----- Goldston	0-8	Channery silt loam.	GM, SM, ML	A-2-4, A-4	10-20	60-80	50-80	30-80	25-75	20-40	NP-10
	8-18	Very channery silt loam, very channery very fine sandy loam.	GM, SM, ML	A-2-4, A-4, A-1-b	20-50	40-80	30-80	25-80	20-60	20-40	NP-10
	18-25	Weathered bedrock	---	---	---	---	---	---	---	---	---
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
HeB, HeC----- Helena	0-5	Sandy loam-----	SM, SC-SM, SC, ML	A-2, A-4	0-5	90-100	90-100	51-95	26-75	<35	NP-10
	5-8	Sandy clay loam, clay loam.	CL, SC	A-6, A-7	0-5	95-100	95-100	70-90	38-70	30-49	15-26
	8-50	Clay loam, sandy clay, clay.	CH	A-7	0-5	95-100	95-100	73-97	56-86	50-85	24-50
	50-65	Variable-----	---	---	---	---	---	---	---	---	---
HfB*: Helena-----	0-5	Sandy loam-----	SM, SC-SM, SC, ML	A-2, A-4	0-5	90-100	90-100	51-95	26-75	<35	NP-10
	5-8	Sandy clay loam, clay loam.	CL, SC	A-6, A-7	0-5	95-100	95-100	70-90	38-70	30-49	15-26
	8-50	Clay loam, sandy clay, clay.	CH	A-7	0-5	95-100	95-100	73-97	56-86	50-85	24-50
	50-65	Variable-----	---	---	---	---	---	---	---	---	---
Sedgefield-----	0-8	Sandy loam-----	SM, SC, ML, CL	A-2, A-4, A-6	0-5	90-100	80-100	50-100	30-60	<35	NP-12
	8-34	Sandy clay, clay loam, clay.	CL, CH	A-7	0-5	95-100	95-100	73-93	60-85	45-85	25-60
	34-54	Sandy loam, sandy clay loam, clay loam.	SC, CL	A-6, A-7, A-4	0-5	95-100	90-100	60-90	36-65	20-45	8-25
	54-72	Variable-----	---	---	---	---	---	---	---	---	---
HrB, HrC----- Herndon	0-7	Loam-----	ML, CL, CL-ML	A-4, A-6	0-2	90-100	85-100	80-98	60-90	<36	NP-12
	7-58	Silty clay loam, clay loam, clay.	MH, ML, CL	A-7	0-1	95-100	85-100	80-99	70-98	41-70	13-40
	58-70	Silt loam, loam, fine sandy loam.	MH, ML	A-7, A-5	0-2	90-100	85-100	80-99	51-95	41-70	9-63

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
LgB----- Lignum	0-6	Loam-----	CL, CL-ML	A-4, A-6	0	95-100	80-100	80-100	55-90	20-35	5-19
	6-35	Silty clay loam, silty clay, clay.	CH, CL	A-7	0-5	80-100	75-100	70-100	55-90	45-70	22-45
	35-56	Silt loam, sandy clay loam, silty clay loam.	SC, CL, ML, SM	A-4, A-6, A-7, A-2	0-5	85-100	50-95	45-80	30-75	30-50	8-18
	56-62	Weathered bedrock	---	---	---	---	---	---	---	---	---
MeB, MeC----- Mecklenburg	0-6	Loam-----	ML, SM, CL-ML, CL	A-4, A-6	0-5	90-100	80-100	65-90	36-65	20-40	NP-15
	6-30	Clay-----	CH, MH	A-7	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	30-38	Loam, sandy clay loam, clay loam.	CL	A-4, A-6, A-7	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	38-62	Variable-----	---	---	---	---	---	---	---	---	---
	62-68	Weathered bedrock	---	---	---	---	---	---	---	---	---
OnA----- Orange	0-9	Loam-----	SM, ML, CL-ML, SC-SM	A-4	0	90-100	75-100	75-95	45-85	<30	NP-10
	9-29	Clay, silty clay, channery silty clay loam.	CH, SC	A-7	0	90-95	50-95	50-95	45-90	70-99	45-70
	29-42	Sandy loam, channery silt loam, sandy clay loam.	SC, CL, GC	A-6, A-7	0-25	70-100	40-100	40-100	30-90	25-45	10-25
	42-61	Weathered bedrock	---	---	---	---	---	---	---	---	---
	61	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
OrB----- Orange	0-9	Gravelly loam----	SM, ML, CL-ML, GM-GC	A-4	0-15	60-100	60-75	45-75	35-65	<30	NP-10
	9-29	Clay, silty clay, channery silty clay loam.	CH, SC	A-7	0	90-95	50-95	50-95	45-90	70-99	45-70
	29-42	Sandy loam, channery silt loam, sandy clay loam.	SC, CL, GC	A-6, A-7	0-25	70-100	40-100	40-100	30-90	25-45	10-25
	42-61	Weathered bedrock	---	---	---	---	---	---	---	---	---
	61	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
PaB2, PaC2----- Pacolet	0-4	Clay loam-----	SC-SM, SC	A-4, A-6	0-1	95-100	90-100	65-85	36-50	20-40	4-17
	4-25	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	80-100	80-100	60-95	51-75	38-65	11-33
	25-60	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-2	80-100	70-100	60-90	25-50	<28	NP-6

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
RoF----- Rion	0-6	Sandy loam-----	SM	A-2, A-4	0-2	90-100	85-100	60-80	20-45	<35	NP-7
	6-27	Sandy loam, sandy clay loam, clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	27-61	Sandy loam, sandy clay loam, loamy sand.	SC, SM, SC-SM	A-2, A-4, A-6	0-2	90-100	80-100	60-85	15-50	<36	NP-12
	61-65	Weathered bedrock	---	---	---	---	---	---	---	---	---
TaD, TaE----- Tatum	0-6	Loam-----	ML, CL, CL-ML	A-4, A-6	0-5	85-100	80-100	65-100	60-90	20-34	5-15
	6-41	Clay loam, silty clay, clay.	MH, CH	A-7	0-5	75-100	75-95	60-95	55-95	50-80	20-45
	41-61	Weathered bedrock	---	---	---	---	---	---	---	---	---
UdB. Udorthents											
Ur*. Urban land											
VaB, VaC----- Vance	0-5	Sandy loam-----	SM, SC-SM	A-2, A-4	0-5	90-100	80-100	55-80	15-40	<27	NP-7
	5-35	Clay loam, sandy clay, clay.	CH	A-7	0-5	95-100	90-100	75-95	65-80	51-80	25-48
	35-60	Variable-----	---	---	---	---	---	---	---	---	---
WeB, WeC, WeD, WeE----- Wedowee	0-5	Sandy loam-----	SM, SC-SM	A-4, A-2-4	0	95-100	90-100	50-99	23-50	<30	NP-6
	5-7	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	90-100	90-100	80-97	40-75	<32	NP-15
	7-25	Sandy clay, clay loam, clay.	SC, ML, CL, MH	A-6, A-7	0	95-100	95-100	65-97	45-75	30-58	10-30
	25-65	Sandy clay loam, clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	80-100	70-100	60-80	30-60	20-35	5-15
WfC----- Wedowee	0-5	Sandy loam-----	SM, SC-SM, SC	A-4, A-2-4	10-20	80-90	70-90	50-90	20-50	<30	NP-10
	5-7	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0-5	90-100	90-100	80-97	40-75	<32	NP-15
	7-25	Sandy clay, clay loam, clay.	SC, ML, CL, SM	A-6, A-7	0	95-100	95-100	65-97	45-75	30-58	10-30
	25-65	Sandy clay loam, clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	80-100	70-100	60-80	30-60	20-35	5-15
WhB----- Wickham	0-8	Sandy loam-----	SM, SC-SM, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	<25	NP-7
	8-48	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	3-15
	48-65	Variable-----	---	---	---	---	---	---	---	---	---
WkB, WkD, WkF----- Wilkes	0-4	Loam-----	ML, SM	A-2, A-4	0-10	90-100	80-100	60-92	25-55	<35	NP-7
	4-15	Clay loam, clay, sandy clay loam.	CL, CH	A-6, A-7	0-10	80-100	80-100	75-96	50-85	30-60	11-35
	15-41	Weathered bedrock	---	---	---	---	---	---	---	---	---
	41	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

\* See description of the map unit for composition and behavior characteristics of the map unit.



TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
ApB, ApC----- Appling	0-6	12-20	1.40-1.65	2.0-6.0	0.10-0.15	4.5-6.5	Low-----	0.24	4	.5-2
	6-39	35-60	1.25-1.45	0.6-2.0	0.15-0.17	4.5-5.5	Low-----	0.28		
	39-46	20-50	1.25-1.45	0.6-2.0	0.12-0.16	4.5-5.5	Low-----	0.28		
	46-66	---	---	---	---	---	-----	---		
AuB*:----- Appling	0-6	12-20	1.40-1.65	2.0-6.0	0.10-0.15	4.5-6.5	Low-----	0.24	4	.5-2
	6-39	35-60	1.25-1.45	0.6-2.0	0.15-0.17	4.5-5.5	Low-----	0.28		
	39-46	20-50	1.25-1.45	0.6-2.0	0.12-0.16	4.5-5.5	Low-----	0.28		
	46-66	---	---	---	---	---	-----	---		
Urban land.										
CeB, CeC----- Cecil	0-7	12-20	1.30-1.50	2.0-6.0	0.12-0.14	4.5-6.5	Low-----	0.28	4	.5-2
	7-12	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low-----	0.28		
	12-52	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low-----	0.28		
	52-64	---	---	---	---	---	-----	---		
Cw*:----- Chewacla	0-9	12-27	1.30-1.60	0.6-2.0	0.15-0.24	4.5-6.5	Low-----	0.28	5	1-4
	9-21	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-6.5	Low-----	0.32		
	21-33	18-35	1.30-1.60	0.6-2.0	0.12-0.20	4.5-6.5	Low-----	0.28		
	33-58	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-7.8	Low-----	0.32		
	58-72	---	---	---	---	---	-----	---		
Wehadkee----- Wehadkee	0-3	12-27	1.35-1.60	2.0-6.0	0.10-0.15	4.5-6.5	Low-----	0.24	5	2-5
	3-34	15-35	1.30-1.50	0.6-2.0	0.16-0.20	4.5-6.5	Low-----	0.32		
	34-60	---	---	---	---	---	-----	---		
EnB, EnC----- Enon	0-4	12-20	1.45-1.65	2.0-6.0	0.11-0.15	5.1-6.5	Low-----	0.24	3	.5-2
	4-7	20-35	1.30-1.50	0.6-2.0	0.12-0.15	5.1-6.5	Low-----	0.24		
	7-33	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High-----	0.28		
	33-64	---	---	---	---	---	-----	---		
GeB, GeC----- Georgeville	0-8	12-27	1.20-1.40	0.6-2.0	0.15-0.20	4.5-6.0	Low-----	0.43	4	.5-2
	8-58	35-75	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low-----	0.28		
	58-72	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low-----	0.32		
GfB2----- Georgeville	0-4	27-35	1.20-1.40	0.6-2.0	0.13-0.18	4.5-6.0	Low-----	0.49	4	<.5
	4-58	35-75	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low-----	0.28		
	58-72	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low-----	0.32		
GoC, GoF----- Goldston	0-8	12-27	1.40-1.60	2.0-6.0	0.10-0.16	3.6-5.5	Low-----	0.15	1	.5-2
	8-18	12-27	1.40-1.60	2.0-6.0	0.06-0.12	3.6-5.5	Low-----	0.05		
	18-25	---	---	---	---	---	-----	---		
	25	---	---	---	---	---	-----	---		
HeB, HeC----- Helena	0-5	12-20	1.58-1.62	2.0-6.0	0.10-0.12	3.6-6.5	Low-----	0.24	4	.5-2
	5-8	20-35	1.46-1.56	0.2-0.6	0.13-0.15	3.6-5.5	Moderate----	0.28		
	8-50	35-60	1.44-1.55	0.06-0.2	0.13-0.15	3.6-5.5	High-----	0.28		
	50-65	---	---	---	---	---	-----	---		

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
HfB*:										
Helena-----	0-5	12-20	1.58-1.62	2.0-6.0	0.10-0.12	3.6-6.5	Low-----	0.24	4	.5-2
	5-8	20-35	1.46-1.56	0.2-0.6	0.13-0.15	3.6-5.5	Moderate----	0.28		
	8-50	35-60	1.44-1.55	0.06-0.2	0.13-0.15	3.6-5.5	High-----	0.28		
	50-65	---	---	---	---	---	-----	---		
Sedgefield-----	0-8	12-20	1.40-1.60	2.0-6.0	0.10-0.15	4.5-6.5	Low-----	0.28	3	.5-2
	8-34	35-60	1.25-1.40	0.06-0.2	0.14-0.18	4.5-6.5	High-----	0.28		
	34-54	10-35	1.35-1.50	0.6-2.0	0.12-0.15	5.6-8.4	Moderate----	0.28		
	54-72	---	---	---	---	---	-----	---		
HrB, HrC-----	0-7	12-27	1.20-1.40	0.6-2.0	0.14-0.20	4.5-6.5	Low-----	0.43	5	.5-1
Herndon	7-58	35-60	1.30-1.60	0.6-2.0	0.13-0.18	3.6-5.5	Low-----	0.28		
	58-70	10-30	1.20-1.40	0.6-2.0	0.05-0.08	3.6-5.5	Low-----	0.32		
LgB-----	0-6	12-27	1.20-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low-----	0.37	4	.5-2
Lignum	6-35	35-55	1.25-1.55	<0.06	0.10-0.18	4.5-5.5	Moderate----	0.28		
	35-56	20-40	1.25-1.55	0.2-0.6	0.10-0.18	4.5-5.5	Low-----	0.28		
	56-62	---	---	0.0-0.06	---	---	-----	---		
MeB, MeC-----	0-6	12-27	1.30-1.50	0.6-2.0	0.14-0.19	5.6-7.3	Low-----	0.24	4	.5-2
Mecklenburg	6-30	40-60	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	Moderate----	0.28		
	30-38	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low-----	0.32		
	38-62	---	---	---	---	---	-----	---		
	62-68	---	---	---	---	---	-----	---		
OnA-----	0-9	12-27	1.25-1.55	0.6-2.0	0.14-0.20	5.1-6.5	Low-----	0.28	3	1-3
Orange	9-29	35-60	1.35-1.65	0.06-0.2	0.10-0.19	5.1-6.5	High-----	0.28		
	29-42	10-35	1.35-1.65	0.2-0.6	0.13-0.20	5.6-7.8	Low-----	0.28		
	42-61	---	---	0.0-0.01	---	---	-----	---		
	61	---	---	---	---	---	-----	---		
OrB-----	0-9	12-27	1.25-1.55	0.6-2.0	0.14-0.20	5.1-6.5	Low-----	0.32	2	1-3
Orange	9-29	35-60	1.35-1.65	0.06-0.2	0.10-0.19	5.1-6.5	High-----	0.24		
	29-42	10-35	1.35-1.65	0.2-0.6	0.13-0.20	5.6-7.8	Low-----	0.24		
	42-61	---	---	0.0-0.01	---	---	-----	---		
	61	---	---	---	---	---	-----	---		
PaB2, PaC2-----	0-4	27-35	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.5	Low-----	0.24	2	.5-1
Pacolet	4-25	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low-----	0.28		
	25-60	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low-----	0.28		
RoF-----	0-6	12-20	1.30-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low-----	0.24	3	.5-2
Rion	6-27	15-35	1.40-1.50	0.6-2.0	0.08-0.15	4.5-6.5	Low-----	0.20		
	27-61	2-20	1.30-1.50	2.0-6.0	0.06-0.12	4.5-6.5	Low-----	0.20		
	61-65	---	---	---	---	---	-----	---		
TaD, TaE-----	0-6	12-27	1.10-1.40	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.37	4	.5-2
Tatum	6-41	45-60	1.40-1.60	0.6-2.0	0.10-0.19	4.5-5.5	Moderate----	0.28		
	41-61	---	---	0.0-0.06	---	---	-----	---		
UdB.										
Udorthents										
Ur*.										
Urban land										

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
VaB, VaC----- Vance	0-5	12-20	1.45-1.70	2.0-6.0	0.10-0.14	4.5-6.0	Low-----	0.24	3	.5-2
	5-35	35-60	1.25-1.40	0.06-0.2	0.12-0.15	4.5-5.5	Moderate-----	0.28		
	35-60	---	---	---	---	---	-----	---		
WeB, WeC, WeD, WeE----- Wedowee	0-5	12-20	1.25-1.60	2.0-6.0	0.10-0.18	4.0-5.5	Low-----	0.24	3	<1
	5-7	14-30	1.30-1.55	0.6-2.0	0.12-0.18	4.0-5.5	Low-----	0.28		
	7-25	35-45	1.30-1.50	0.6-2.0	0.12-0.18	4.0-5.5	Low-----	0.28		
	25-65	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.0-5.5	Low-----	0.28		
WfC----- Wedowee	0-5	5-20	1.25-1.60	2.0-6.0	0.10-0.18	4.0-5.5	Low-----	0.20	3	0-1
	5-7	14-30	1.30-1.55	0.6-2.0	0.12-0.18	4.0-5.5	Low-----	0.28		
	7-25	35-45	1.30-1.50	0.6-2.0	0.12-0.18	4.0-5.5	Low-----	0.28		
	25-65	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.0-5.5	Low-----	0.28		
WhB----- Wickham	0-8	12-20	1.45-1.65	2.0-6.0	0.11-0.16	4.5-6.0	Low-----	0.24	5	.5-2
	8-48	18-35	1.30-1.50	0.6-2.0	0.12-0.17	4.5-6.0	Low-----	0.24		
	48-65	---	---	---	---	---	-----	---		
WkB, WkD, WkF---- Wilkes	0-4	5-20	1.30-1.50	2.0-6.0	0.11-0.15	5.1-6.5	Low-----	0.24	1	.5-2
	4-15	20-40	1.40-1.60	0.2-0.6	0.15-0.20	6.1-7.8	Moderate-----	0.32		
	15-41	---	---	---	---	---	-----	---		
	41	---	---	---	---	---	-----	---		

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
ApB, ApC----- Appling	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
AuB*: Appling-----	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land.											
CeB, CeC----- Cecil	B	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
Cw*: Chewacla-----	C	Frequent----	Brief to long.	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
Wehadkee-----	D	Frequent----	Brief to long.	Nov-Jun	0-1.0	Apparent	Nov-May	>60	---	High-----	Moderate.
EnB, EnC----- Enon	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
GeB, GeC, GfB2----- Georgeville	B	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
GoC, GoF----- Goldston	C	None-----	---	---	>6.0	---	---	10-20	Soft	Moderate	High.
HeB, HeC----- Helena	C	None-----	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	High-----	High.
HfB*: Helena-----	C	None-----	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	High-----	High.
Sedgefield-----	C	None-----	---	---	1.0-1.5	Perched	Jan-Apr	>60	---	High-----	Moderate.
HrB, HrC----- Herndon	B	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
LgB----- Lignum	C	None-----	---	---	1.0-2.5	Perched	Dec-May	40-60	Soft	High-----	High.
MeB, MeC----- Mecklenburg	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
OnA, OrB----- Orange	D	None-----	---	---	1.0-3.0	Perched	Dec-May	40-60	Soft	High-----	Moderate.
PaB2, PaC2----- Pacolet	B	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
RoF----- Rion	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	High.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard- ness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
TaD, TaE----- Tatum	B	None-----	---	---	>6.0	---	---	40-60	Soft	High-----	High.
UdB. Udorthents											
Ur*. Urban land											
VaB, VaC----- Vance	C	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
WeB, WeC, WeD, WeE, WfC----- Wedowes	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	High.
WhB----- Wickham	B	Rare-----	---	---	>6.0	---	---	>60	---	Moderate	High.
WkB, WkD, WkF----- Wilkes	C	None-----	---	---	>6.0	---	---	10-20	Soft	Moderate	Moderate.

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Appling-----	Clayey, kaolinitic, thermic Typic Kanhapludults
Cecil-----	Clayey, kaolinitic, thermic Typic Kanhapludults
Chewacla-----	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Enon-----	Fine, mixed, thermic Ultic Hapludalfs
Georgeville-----	Clayey, kaolinitic, thermic Typic Hapludults
Goldston-----	Loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts
Helena-----	Clayey, mixed, thermic Aquic Hapludults
Herndon-----	Clayey, kaolinitic, thermic Typic Hapludults
Lignum-----	Clayey, mixed, thermic Aquic Hapludults
Mecklenburg-----	Fine, mixed, thermic Ultic Hapludalfs
Orange-----	Fine, montmorillonitic, thermic Albaquic Hapludalfs
Pacolet-----	Clayey, kaolinitic, thermic Typic Kanhapludults
*Rion-----	Fine-loamy, mixed, thermic Typic Hapludults
Sedgefield-----	Fine, mixed, thermic Aquultic Hapludalfs
Tatum-----	Clayey, mixed, thermic Typic Hapludults
Udorthents-----	Udorthents
Vance-----	Clayey, mixed, thermic Typic Hapludults
Wedowee-----	Clayey, kaolinitic, thermic Typic Kanhapludults
*Wehadkee-----	Fine-loamy, mixed, nonacid, thermic Typic Fluvaquents
Wickham-----	Fine-loamy, mixed, thermic Typic Hapludults
Wilkes-----	Loamy, mixed, thermic, shallow Typic Hapludalfs

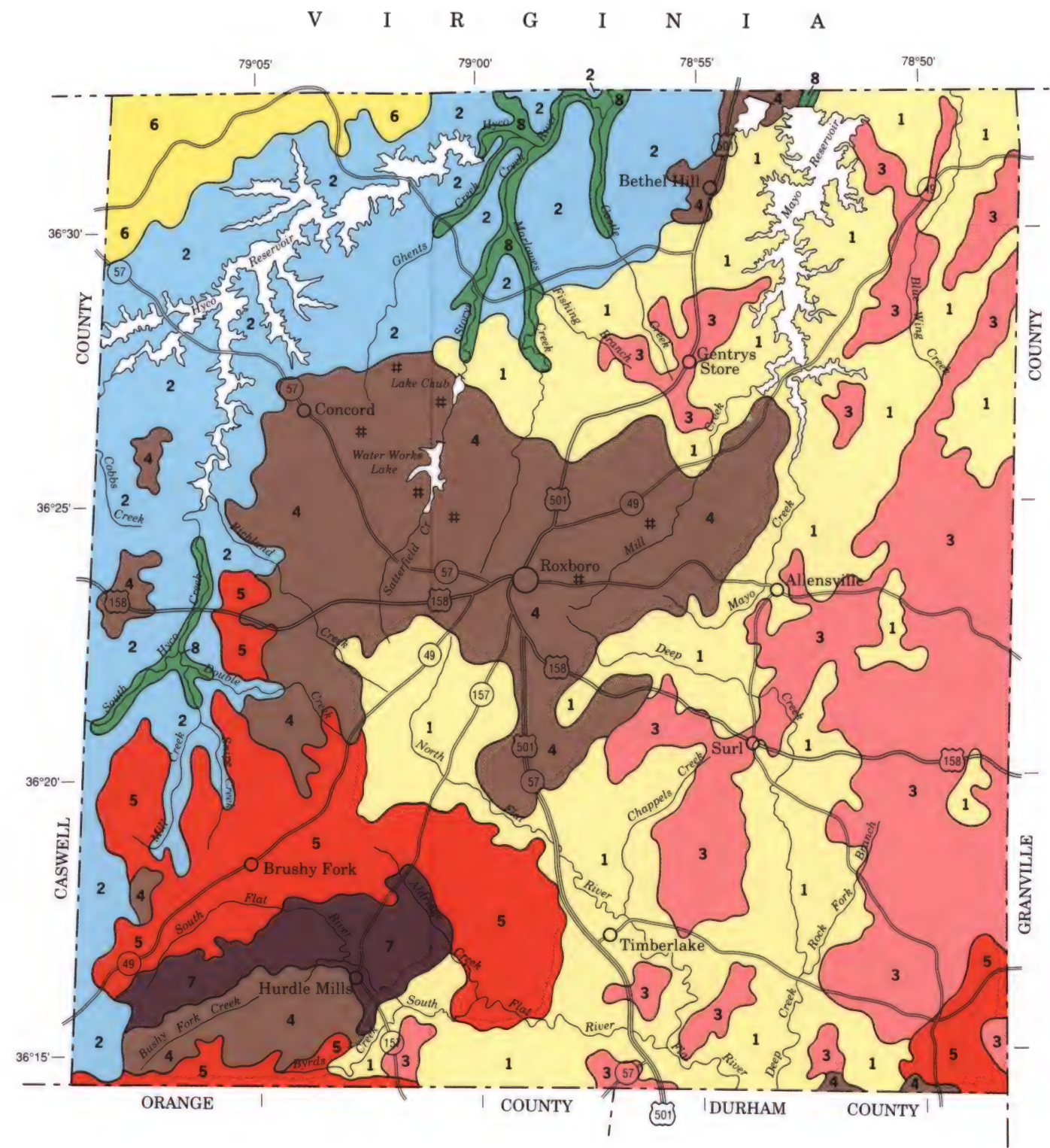
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### SOIL LEGEND\*

- 1 GEORGEVILLE-HERNDON-TATUM
- 2 WILKES-ENON-HELENA
- 3 LIGNUM-ORANGE
- 4 APPLING-WEDOWEE-CECIL
- 5 HELENA-VANCE
- 6 PACOLET-WEDOWEE
- 7 ORANGE-MECKLENBURG
- 8 CHEWACLA-WEHADKEE

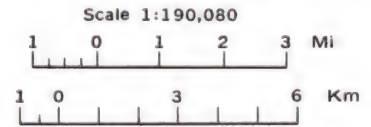
\* The units on this legend are described in the text under the heading "General Soil Map Units."

# Special symbol within unit 4 denoting Wedowee bouldery soils. Each symbol represents areas that range from about 150 to 400 acres in size.

Compiled 1994

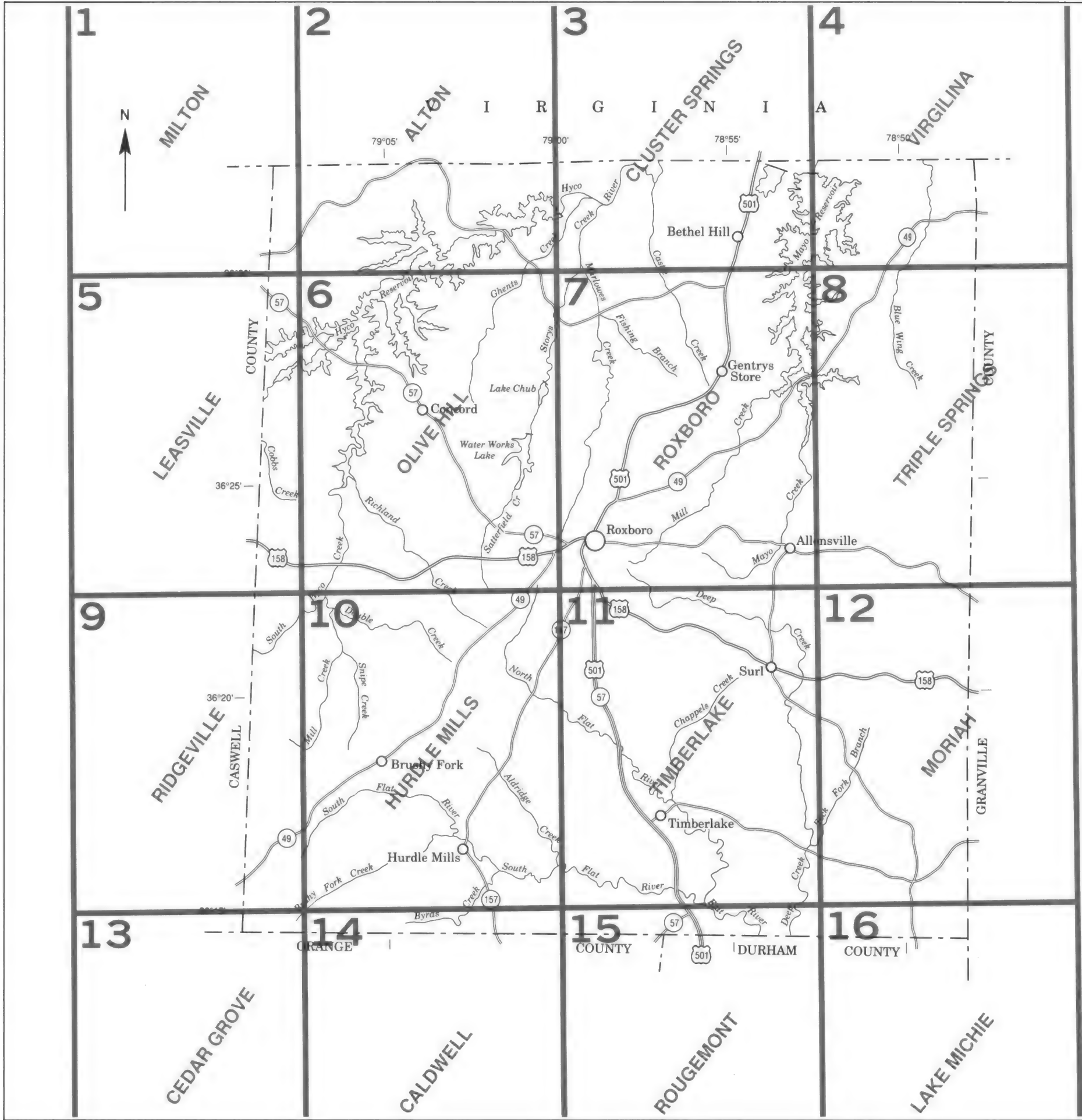
UNITED STATES DEPARTMENT OF AGRICULTURE  
 SOIL CONSERVATION SERVICE  
 NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH, AND NATURAL RESOURCES  
 NORTH CAROLINA AGRICULTURAL RESEARCH SERVICE  
 NORTH CAROLINA COOPERATIVE EXTENSION SERVICE  
 PERSON COUNTY SOIL AND WATER CONSERVATION DISTRICT  
 PERSON COUNTY BOARD OF COMMISSIONERS

## GENERAL SOIL MAP PERSON COUNTY, NORTH CAROLINA

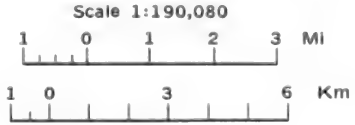


Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.





**INDEX TO MAP SHEETS**  
**PERSON COUNTY, NORTH CAROLINA**



SOIL LEGEND

Soil map symbols and map unit names are alphabetical. Map symbols are letters or a combination of letters and a number. The first letter, always a capital, is the initial letter of the soil series name or miscellaneous area. The second letter is a small letter. The third letter, if used, is always a capital letter and denotes slope or landform. A final number of 2 indicates that the soil is eroded. Symbols with only two letters indicate nearly level soils or miscellaneous areas.

SYMBOL

NAME

ApB Appling sandy loam, 2 to 6 percent slopes  
ApC Appling sandy loam, 6 to 10 percent slopes  
AuB Appling-Urban land complex, 2 to 10 percent slopes

CeB Cecil sandy loam, 2 to 6 percent slopes  
CeC Cecil sandy loam, 6 to 10 percent slopes  
Cw Chewacla and Wehadkee loams, frequently flooded

EnB Enon fine sandy loam, 2 to 6 percent slopes  
EnC Enon fine sandy loam, 6 to 10 percent slopes

GeB Georgeville loam, 2 to 6 percent slopes  
GeC Georgeville loam, 6 to 10 percent slopes  
GfB2 Georgeville clay loam, 2 to 6 percent slopes, eroded  
GoC Goldston channery silt loam, 4 to 15 percent slopes  
GoF Goldston channery silt loam, 15 to 45 percent slopes

HeB Helena sandy loam, 2 to 6 percent slopes  
HeC Helena sandy loam, 6 to 10 percent slopes  
HfB Helena-Sedgefield sandy loams, 2 to 6 percent slopes  
HrB Herndon loam, 2 to 6 percent slopes  
HrC Herndon loam, 6 to 10 percent slopes

LgB Lignum loam, 2 to 6 percent slopes

MeB Mecklenburg loam, 2 to 6 percent slopes  
MeC Mecklenburg loam, 6 to 10 percent slopes

OnA Orange loam, 0 to 2 percent slopes  
OrB Orange gravelly loam, 2 to 7 percent slopes

PaB2 Pacolet clay loam, 2 to 6 percent slopes, eroded  
PaC2 Pacolet clay loam, 6 to 10 percent slopes, eroded

RoF Rion sandy loam, 25 to 40 percent slopes

TaD Tatum loam, 10 to 15 percent slopes  
TaE Tatum loam, 15 to 35 percent slopes

UdB Udorthents, loamy, gently sloping  
Ur Urban land

VaB Vance sandy loam, 2 to 6 percent slopes  
VaC Vance sandy loam, 6 to 10 percent slopes

WeB Wedowee sandy loam, 2 to 6 percent slopes  
WeC Wedowee sandy loam, 6 to 10 percent slopes  
WeD Wedowee sandy loam, 10 to 15 percent slopes  
WeE Wedowee sandy loam, 15 to 25 percent slopes  
WfC Wedowee sandy loam, 2 to 10 percent slopes, extremely bouldery  
WhB Wickham sandy loam, 2 to 6 percent slopes  
WkB Wilkes loam, 2 to 8 percent slopes  
WkD Wilkes loam, 8 to 15 percent slopes  
WkF Wilkes loam, 15 to 45 percent slopes

CONVENTIONAL AND SPECIAL  
SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state, or province

County or parish

Minor civil division

Reservation (national forest or park, state forest or park, and large airport)

Land grant

Limit of soil survey (label)

Field sheet matchline and neatline

AD HOC BOUNDARY (label)

Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK  
1 890 000 FEET

LAND DIVISION CORNER  
(sections and land grants)

ROADS

Divided (median shown if scale permits)

Other roads

Trail

ROAD EMBLEM & DESIGNATIONS

Interstate

Federal US 501, 158

State 49, 157, 57

Other S.R. 1715

RAILROAD

POWER TRANSMISSION LINE  
(normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

Without road

With road

With railroad

DAMS

Large (to scale)

Medium or Small  
(Named where applicable)

PITS

Gravel pit

Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

Farmstead, house (omit in urban area) (occupied)

Church

School

Indian mound (label)

Located object (label)

Tank (label)

Wells, oil or gas

Windmill

Kitchen midden

WATER FEATURES

DRAINAGE

Perennial, double line

Perennial, single line

Intermittent

Drainage end

Canals or ditches

Double-line (label)

Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

Perennial

Intermittent

MISCELLANEOUS WATER FEATURES

Marsh or swamp

Spring

Well, artesian

Well, irrigation

Wet spot

SPECIAL SYMBOLS FOR  
SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS

Bedrock (points down slope)

Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE (normally not shown)

MISCELLANEOUS

Blowout

Clay spot

Gravelly spot

Gumbo, slick or scabby spot (sodic)

Dumps and other similar non soil areas

Prominent hill or peak

Rock outcrop (includes sandstone and shale)

Saline spot

Sandy spot

Severely eroded spot

Slide or slip (tips point upslope)

Stony spot, very stony spot

RECOMMENDED AD HOC SYMBOLS

Small Borrow Areas < 3 acres

On General Soil Map - Showing Bouldery areas



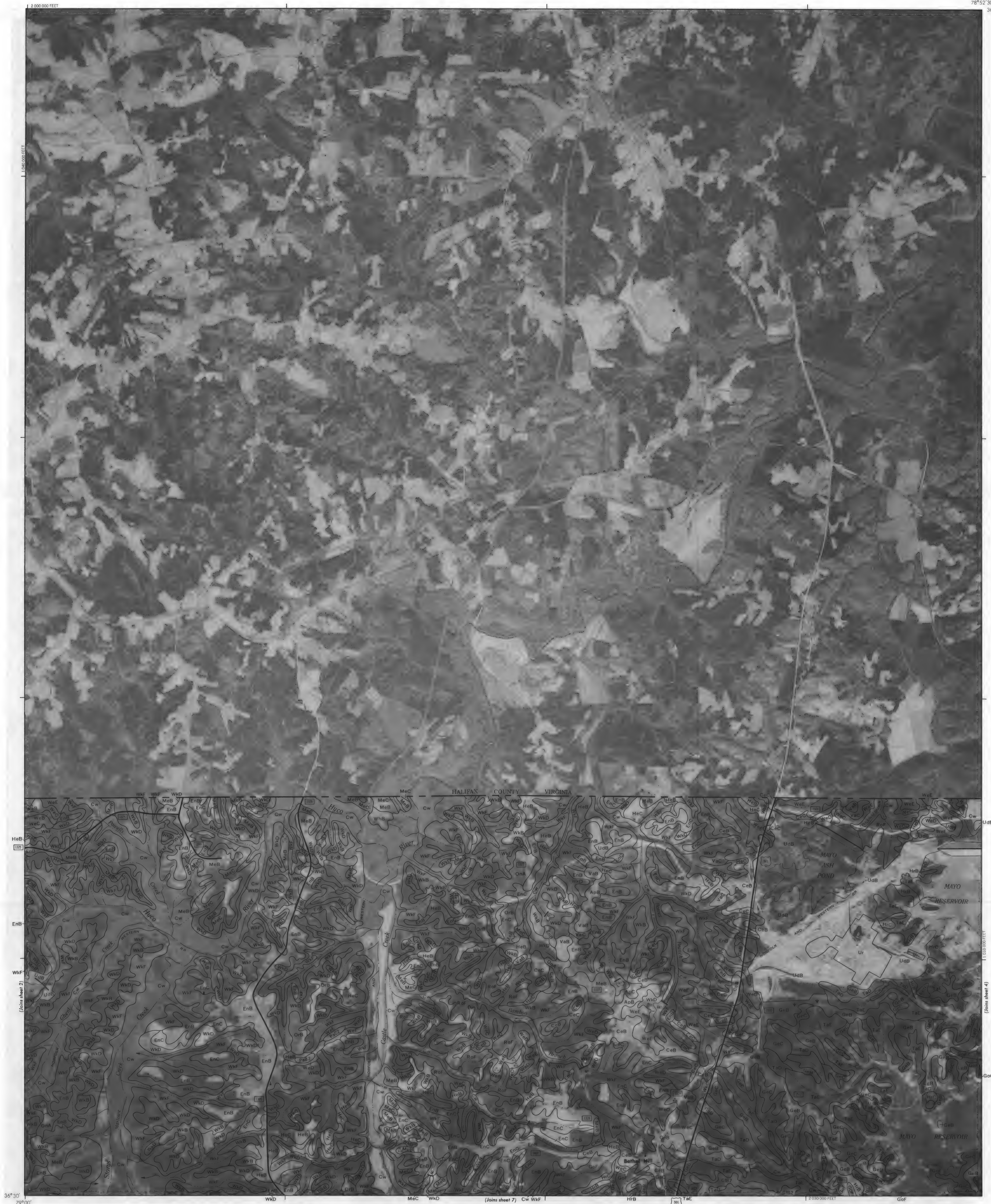




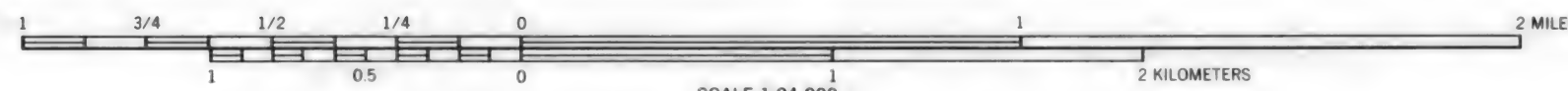




78°52'30"  
36°37'30"



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1977-1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

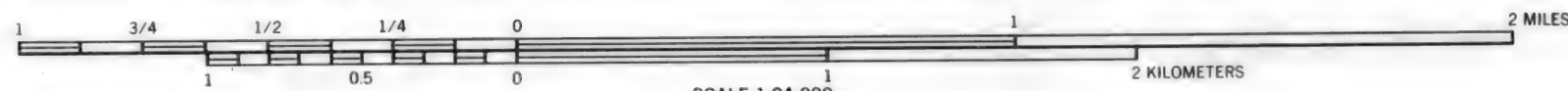


PERSON COUNTY, NORTH CAROLINA NO. 3





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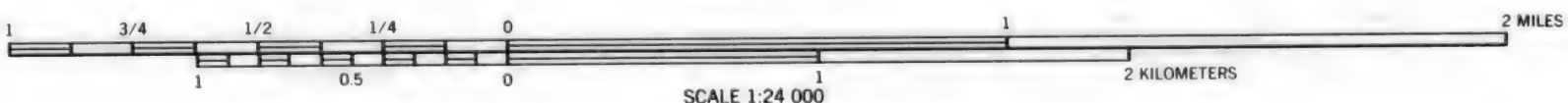


PERSON COUNTY, NORTH CAROLINA NO. 4





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PERSON COUNTY, NORTH CAROLINA NO. 5

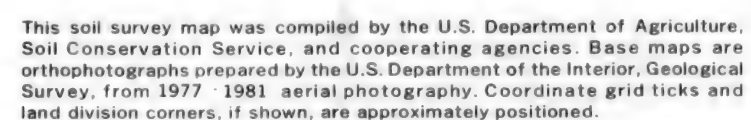




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PERSON COUNTY, NORTH CAROLINA NO. 6

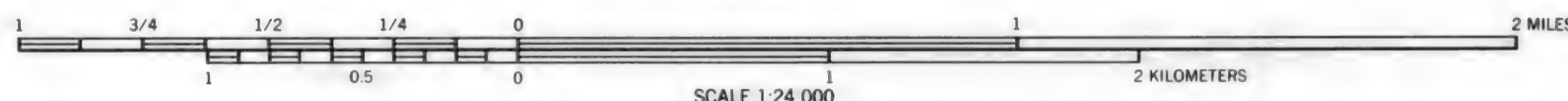








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PERSON COUNTY, NORTH CAROLINA NO. 8

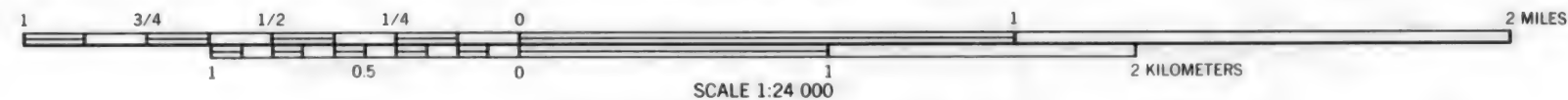






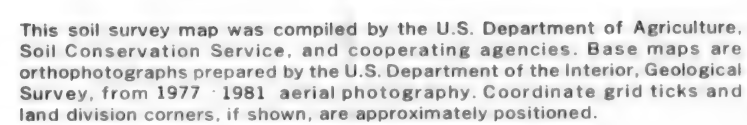


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PERSON COUNTY, NORTH CAROLINA NO. 10









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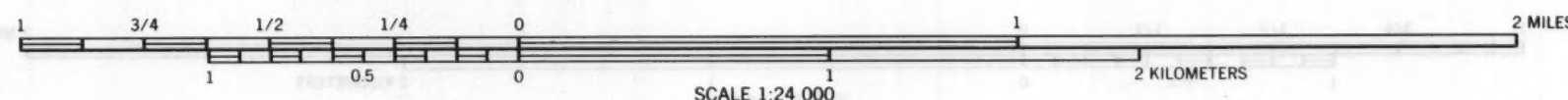
PERSON COUNTY, NORTH CAROLINA NO. 12

SHEET NO. 12 OF 16





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PERSON COUNTY, NORTH CAROLINA NO. 13





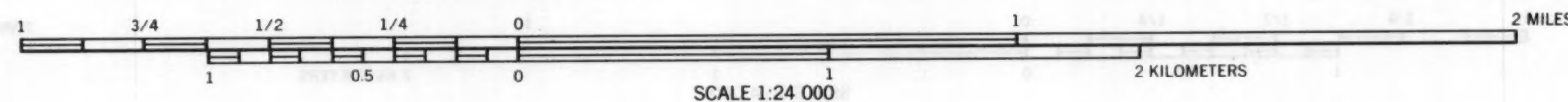






36°07'30"  
79°00'

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PERSON COUNTY, NORTH CAROLINA NO. 15

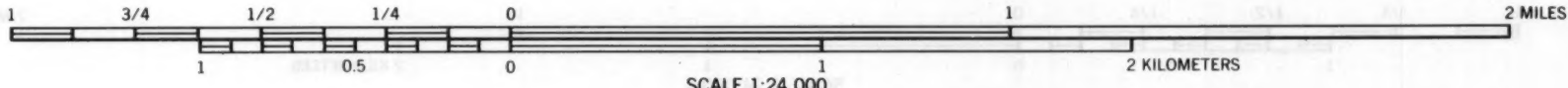


SHEET NO. 15 OF 16





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PERSON COUNTY, NORTH CAROLINA NO. 16

N